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Original Articles.

THE SURGICAL TREATMENT OF TRAUMATIC HEMORRHAGE OF THE SPLEEN.*

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The timely and intelligent application of the modern hemostatic resources enables the surgeon to deal successfully with external hemorrhage, but the treatment of visceral hemorrhage from the large vascular internal organs is by no means a closed chapter. Hemorrhage from wounds of the spleen, liver and kidneys is usually profuse, and is more frequently the result of injury to the parenchyma and veins than to the principal artery or its larger branches; in other words, the loss of blood is more frequently due to parenchymatous and venous than arterial hemorrhage. As a rule, the severity of traumatic hemorrhage of these organs bears a direct relation to the degree of their vascularity. The absence of muscular tissue in these organs is largely responsible for the profuseness of the hemorrhage and the difficulties encountered in attempts to arrest it. The severed vessels do not contract; their lumina remain patent, thus maintaining mechanical conditions antagonistic to spontaneous hemostasis by thrombus formation. The great abundance of capillary vessels and the delicate structure of the large veins are other anatomic features adverse to Nature's efforts in arresting the hemorrhage. The friability of the parenchyma of these organs and the thinness of their capsular investment render it difficult to apply the direct hemostatic measures so reliable in arresting hemorrhage from other organs and parts, and for these reasons can not be resorted to here with the same sense of security. Even when these organs, when the source of hemorrhage, are exposed by the accident which caused the visceral injury, or when the visceral wound has been made accessible by incision, the surgeon is often at a loss what course to pursue. As the hemorrhage is often so severe as to place in immediate jeopardy the life of the patient, the surgeon must of necessity act promptly and with decision. Hesitation becomes a source of danger under such circumstances. The spleen is one of the most vascular organs in the body. If the abdomen of an anesthetized dog is opened, the spleen exposed and the animal bled to death by cutting the femoral or common carotid artery, the organ becomes pale and loses two-thirds of its volume before the animal expires. The same reduction in size follows section of the splenic artery. With the increase of the splenic anemia, the parenchyma becomes firmer.

Traumatic hemorrhage of the spleen must necessarily vary in accordance with the size, direction, location and character of the wound. A wound near the hilus of the organ, implicating the principal trunk of the splenic artery, would naturally give rise to a maximum amount of hemorrhage. As a rule, the larger the wound, the severer the hemorrhage. A transverse wound bleeds more profusely than a longitudinal one because it severs more large vessels, the wounds being of the same size. An incised wound bleeds more freely than a lacerated, contused or punctured wound for the same reasons as incised wounds elsewhere. A brief study of the available clinical material applicable to consideration of traumatic hemorrhage of the spleen and its surgical treatment should prove interesting, as well as profitable, at this time.

RUPTURE OF SPLEEN.

E. Berger[1] has collected 168 cases of rupture of the spleen. Deaths occurred as follows:

On the first day	145	86.3 per cent.
Of these, during the first hour	87	51.8 " "
From 2 to 10 hours	43	25.6 " "
From 11 to 24 hours	15	8.9 " "
After the first day	23	13.7 " "
Of these on the second day		4
Of these on the third day		6
Of these on the fourth day		3
Of these on the fifth day		4
Of these on the twelfth and thirteenth day, each		2
Of these on the sixteenth and twenty-first day, each		1

In those who died on the first day hemorrhage was the immediate cause of death, and in some of those who died later, so that not more than in 10 per cent. could infection be regarded as the cause of death.

GUNSHOT WOUNDS.

During the Civil War 253,142 of the Federal Army were wounded, and in only 29 of this immense number wound of the spleen is recorded. During the Franco-Prussian War, of 99,566 wounded of the German army, only 4 wounds of the spleen are mentioned.

Robinson,[2] in his report on 1,596 gunshot wounds in the Philippine campaign, says: "Death in consequence of gunshot wounds of the spleen was the rule. Our statistics show only one recovery."

Sir Frederick Treves refers to one case of gunshot wound of the spleen operated on by laparotomy in the South African War. The patient died on the table.

The number of spleen wounds in military statistics is small because wounds of this organ are usually associated with other grave complications, and only too often

* Presented to the Surgical Section of the Madrid International Medical Congress.

1. Archiv für klinische Chirurgie, Bd. xxviii, Heft 3.
2. Annals of Surgery, February, 1901.

death ensues on the field before assistance can be rendered.

Of 80 cases of gunshot wounds of the spleen collected by Berger from all sources who died without operation, 34 died of hemorrhage on the first day.

Of the cases subjected to surgical treatment, 16.7 per cent. which occurred in military practice and 63.6 per cent. in civil practice usually died of hemorrhage. Death before the fourth day could generally be attributed to hemorrhage; after that time to infection. Infection is again very prone to give rise to secondary hemorrhage.

INCISED AND STAB WOUNDS.

Berger tabulated 40 cases of incised and stab wounds of the spleen. In 10 of the cases the wounded spleen was prolapsed. In 14 cases, without prolapse, surgical treatment was not resorted to; the mortality was 78.6 per cent. Hemorrhage was the predominating cause of death, usually within twenty-four hours. Statistics go to show that the prognosis is much more favorable if the wounded organ is prolapsed.

SURGICAL TREATMENT.

The surgical treatment of wounds of the spleen has been studied with special care by Mayer, Edler and Berger. Berger's[3] painstaking statistical work brings the subject up to the present day. He collected 127 cases of wounds of the spleen treated by laparotomy. Of this number, 90 were subparietal wounds, 18 gunshot and 19 incised and stab wounds. In more than 80 per cent. the indication for laparotomy was hemorrhage. Operation was performed from six to nine hours after injury. In 80 cases the wounded organ was removed, with 35 deaths. Suturing (splenorrhaphy) was done in 14 cases, with 2 deaths. Tamponade was employed in 10 cases, with only one death. In many of these cases there were found other visceral injuries, which made further operative intervention necessary.

SPLENORRHAPHY.

Suture of wounds of the spleen was first performed by Lamarchia in 1896. His patient died of secondary hemorrhage an hour and a half after the operation. In a similar case, Madelung, after suturing the spleen, covered the sutured wound with omentum, and his patient recovered.

CAUTERIZATION.

In a case of a splenic wound which bled profusely Rehn attempted to arrest the hemorrhage by suturing. The bleeding continued, and was finally arrested by the use of the actual cautery. Snegnireff made use of hot steam. The actual cautery has a very limited sphere of usefulness in the treatment of traumatic hemorrhage of the spleen, owing to its uncertainty and the additional destruction of tissue by its use, and the liability of extending the injury inflicted to adjacent organs.

TAMPONADE.

Kelling recommends air tamponade of the peritoneal cavity as a hemostatic for the arrest of visceral hemorrhage. In a dog he divided the spleen transversely, injected air into the abdominal cavity until by intraperitoneal pressure the hemorrhage was completely arrested. He probably would not rely on this method of arresting hemorrhage in the treatment of traumatic hemorrhage of the spleen in the human subject. Gauze tamponade has yielded the best results, and should be given the preference in appropriate cases.

LIGATION OF THE SPLENIC ARTERY.

Ligation of the splenic artery would certainly control hemorrhage from any wound of the spleen, regardless of location and size. It is unfortunate that this radical measure is incompatible with the preservation of the wounded organ, as has been demonstrated by the experiments of Jonnesco and his assistants. Most of the animals operated on by ligating the splenic artery of the intact spleen died of a toxemia which, according to the opinions of the experimenters, was caused by the production of a poison in the substance of the spleen completely deprived of its blood supply. They suggested that this poison found its way into the peritoneal cavity, and from there was absorbed by the lymphatics and entered the general circulation, causing death from acute toxemia. In the few instances of recovery of the animals the spleen became extremely atrophic in less than two weeks.

SPLENECTOMY.

It has been shown by experiments on animals, as well as by clinical observation, that the spleen can be removed without any serious immediate or remote consequences. This well-known fact would naturally suggest to the surgeon the advisability of resorting to excision of the wounded spleen in all cases in which less severe measures promise little or no encouragement in arresting the hemorrhage. Then, too, splenectomy for hemorrhage has a fairly good record. Of the 80 cases tabulated by Berger, in which the spleen was removed for hemorrhage, 35 recovered. Notwithstanding the facts referred to above, it must be contended that ideal surgery is and always will be conservative surgery. The unnecessary removal of any organ for hemorrhage or other lesion amenable to successful treatment by conservative measures is faulty in theory and practice, and should not be encouraged. The spleen has its important functions to perform, and, although in its absence other organs appear to assume its rôle in the organism and compensate for its loss, we as yet are not warranted in assuming that its removal is a matter of so little consequence that it is not necessary to limit it to cases in which no other alternative is left. Splenectomy should be reserved for cases of traumatic hemorrhage of the spleen in which the bleeding can not be arrested by conservative treatment, and in cases in which the visceral injury otherwise is of a nature incompatible with attempts to conserve the damaged organ.

PARTIAL SPLENECTOMY.

Excision of the injured part of the spleen may become necessary in the surgical treatment of hemorrhage of the spleen. Hartin Jordan[4] has made some very interesting experiments which have a practical bearing on this question. He made partial excision of the spleen on 22 dogs. Hemorrhage was controlled by double ligature of the arteries and suturing of the margins of the visceral wound. He found that the lower part of the spleen could be removed without giving rise to any troublesome hemorrhage or serious general disturbances, which could not be said when the entire spleen or its upper part was excised, as ligation of the splenic artery compromises the splenic plexus, which is in intimate relation with the solar plexus.

3. "Die Verletzungen der Milz und ihre chirurgische Behandlung," Archiv f. klinische Chirurgie, Bd. lxviii, Heft 4.

4. The Lancet, Jan. 22, 1899.

FORCIPRESSURE OF WOUND MARGINS.

Under slow broad pressure with forcipressure forceps, the pulp of the spleen is displaced from the meshwork of loose connective tissue which, in turn, is condensed into a broad firm band in which the larger blood vessels become entangled, their cut ends contused, and hemorrhage even of branches of the splenic artery of considerable size and large veins is arrested. This method of arresting arterial, venous and parenchymatous hemorrhage has been practiced extensively and with the best results in arresting hemorrhage from other vascular organs and tissues, and is of special value in the surgical treatment of traumatic hemorrhage of the spleen. During the winter of 1902 I made a series of experiments on dogs to test its hemostatic value. A few of these experiments I will relate very briefly here:

EXPERIMENT 1.—This experiment was made solely for the purpose of demonstrating the immediate hemostatic effect of forcible compression in arresting traumatic hemorrhage of the spleen. Dog of medium size. Under ether anesthesia the abdomen was opened, the spleen exposed and a longitudinal incision, three and one-half inches, was made through the entire thickness, causing very profuse hemorrhage. The margins of the visceral incision were clamped with heavy compression forceps, making slow but firm pressure. The immediate effect of the pressure was to squeeze out of the fibrous meshwork of the spleen the pulp, transforming the tissues in the grasp of the forceps into a firm fibrous mass. The hemorrhage was almost completely arrested, and ceased entirely on uniting the crushed tissues with two catgut sutures.

EXPERIMENT 2.—Small dog. Under complete anesthesia the abdomen was opened in the median line by an incision four inches in length. The left lobe of the liver projected into the incision and was incised two-thirds in its anteroposterior diameter. The hemorrhage, which was profuse, was arrested by clamping the margins of the wound. The crushed tissues were sutured together with three catgut sutures, all of which were tied on the convex side. The hemorrhage was completely controlled by the combined process of crushing and suturing. The spleen was then incised deeply in a transverse direction, the wound margins subjected to slow forceps pressure and the crushed tissues sutured with silk. The abdominal incision was closed with six silk through-and-through sutures and the wound sealed. The dog lived four days. Surface of visceral wounds adherent to omentum and parietal peritoneum. An abscess was found in the spleen under the omental adhesions. A silk suture completely detached was found floating in the pus. Nothing abnormal in the liver wound.

EXPERIMENT 3.—Large black bitch. Chloroform anesthesia. Through a median incision the spleen was exposed and an incision, four inches in length, was made in the center of its long axis, dividing the organ nearly into equal halves. In consequence of the profuse bleeding the organ collapsed in a few moments to less than one-half of its normal volume. The hemorrhage was promptly arrested by marginal crushing and the crushed borders united with four strong catgut sutures. One additional suture was placed on the under surface of the spleen to arrest the bleeding from a small point. The animal exhibited no untoward symptoms after the operation, and was killed a week later. External wound completely healed. Spleen slightly enlarged. Wound on both sides covered by adherent omentum. Healing of visceral wound satisfactory and far advanced.

EXPERIMENT 4.—Light brown, medium-sized dog. Through a median incision, four inches in length, the spleen was exposed and its longer but narrower half was deeply incised from the free border in a longitudinal direction. With a pair of long hemostatic forceps the borders of the wound were crushed slowly, with the result of arresting the profuse hemorrhage almost completely. The slight oozing which remained was arrested on uniting the crushed margins with six catgut sutures. Abdomen closed with six silk sutures. The dog showed no indications of indisposition after the operation. The appetite remained voracious and was satisfied by a liberal diet of coarse food. The animal was killed two weeks after the operation. The injured part of the spleen was much enlarged, club-shaped and enveloped by firm adhesions. On palpation distinct fluctuation could be felt. On incision about an ounce of pus escaped. The abscess cavity was circumscribed and well walled off. On closer inspection the cavity was found to be on the surface of the spleen, the anterior wall being formed by the adherent omentum. Beneath the abscess healing of the splenic wound had taken place.

EXPERIMENT 5.—White fox terrier, poorly nourished. Through the usual median abdominal incision the spleen was made accessible and was cut transversely near the hilus, through two-thirds of its diameter. The severe bleeding yielded promptly to crushing of the margins of the wound with a strong pair of hemostatic forceps with wide blades. The crushing was continued for two minutes. With three catgut stitches the crushed edges were sutured. Hemostasis absolute. The behavior of the animal after the operation suggested satisfactory repair of the wound. The dog was killed in three weeks and the postmortem showed that the wound of the spleen had healed in an ideal manner. Size of spleen normal, or nearly so; adhesions few and slight; organ freely movable.

EXPERIMENT 6.—Small male dog. In this experiment the spleen was deeply incised in a transverse direction through its largest part. Under slow marginal pressure with clamp forceps the hemorrhage was quickly and almost completely arrested. The crushed tissues were then united with three catgut sutures and the abdomen closed with three silk sutures. Dog remained in excellent condition when killed, three weeks later. The splenic wound was found healed and covered by omentum. Organ normal in size and freely movable.

EXPERIMENT 7.—Medium-sized bitch. In this instance the spleen was incised longitudinally from the free border to the depth of three inches. The bleeding, which was very profuse, yielded promptly to slow crushing of the wound margins. The blades of the forceps were applied in such a way that about one-fourth of an inch of the margin of the wound escaped from their grasp. A slight oozing which persisted was arrested by suturing together of the crushed tissues with fine catgut sutures. The dog was in perfect condition when killed, four weeks later. Spleen slightly enlarged. Omentum adherent to the surface of the wound. Ideal healing of the visceral wound through the entire length of the incision.

REMARKS ON THE EXPERIMENTS.

These experiments prove the hemostatic value of marginal crushing of wounds of the spleen. All of the wounds made were clean-cut, incised wounds, hence wounds calculated to give rise to a maximum amount of hemorrhage. In all cases the hemorrhage, which was always profuse, was completely arrested by the crushing and suturing of the crushed margins. Secondary hemorrhage never occurred. The postmortem specimens showed invariably adhesions between the omentum and the wound surfaces. In two of the experiments a small localized abscess developed, undoubtedly in consequence of infected ligature material. All of the visceral wounds were large and a considerable amount of splenic tissue was destroyed by the crushing process, but nothing approaching marked atrophy was observed in any of the specimens. Even in the cases in which the organ was divided two-thirds through its transverse diameter near the hilus the distal part retained its vitality, and exhibited no gross lesions in consequence of the diminished blood supply. I am of the opinion that much of the destroyed tissue was replaced by regeneration, as exhibited by the specimens. The regenerative capacity of splenic tissue has been well established by experimental researches made for this special purpose.

The procedure I have described recommends itself in the treatment of certain wounds of the normal spleen,

particularly in incised wounds and straight tears, when a quick hemostasis is a matter of greatest importance. The broad forcipressure can be relied on in arresting the bleeding, consequently further serious loss of blood is prevented the moment the visceral wound has been made accessible. Too much stress can not be placed on the importance of making the compression slowly, as rapid compression is liable to tear the fragile tissue instead of compressing it. With two large hemostatic forceps, both wound margins are compressed simultaneously, thus controlling the hemorrhage the moment they are applied. The crushed margins should be sutured together with catgut. The slight oozing, which sometimes remains, takes place from the crushed tissues, and sometimes yields promptly to the suturing of the

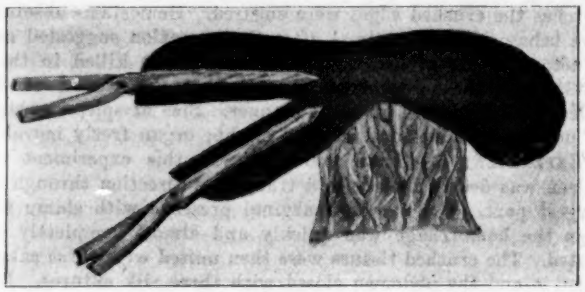

Fig. 1.—Crushing the margins of the wound in the spleen.

compressed borders. Another reason for suturing the wound is to prevent extensive and perhaps harmful adhesions between the wound margins and adjacent viscera. There is also reason to believe that approximation of the wound margins is conducive to an ideal healing of the wound, and subsequent regeneration of the tissues lost by the injury and the operative intervention. As crushed tissue is more liable to infection than vascular tissue, permanent suture material should be avoided.

In discussing the general subject of hemostasis of splenic wounds, it is apparent that no one exclusive

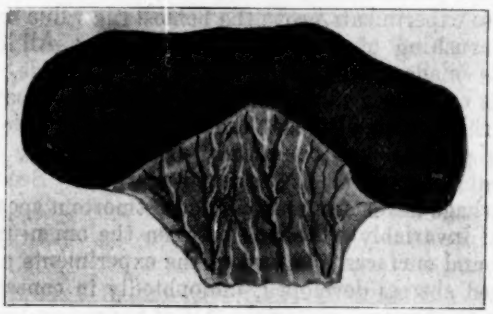

Fig. 2.—The wound sutured.

method of treatment can be relied on. The treatment to be employed must necessarily depend on the location, size and character of the wound, and the condition of the wounded organ. The one great rule that should not be lost sight of, and one which should apply to all kinds of surgical work, is, not to sacrifice any more healthy tissue than is absolutely necessary to meet the indications presented by each individual case. Conservative surgery should take the place here, as elsewhere, of mutilating surgery. The fact that the spleen can be removed in animals without any serious consequences following does not warrant the conclusion that this organ can be sacrificed with immunity. It is true that the spleen has been removed in the human subject for various indications without any apparent ill effect, but cases may occur in which other organs may fail to assume compensatory action. The retroperitoneal hemolymph glands in the renal and other regions might refuse to respond to the need of an additional blood-producing organ. The removal of a wounded healthy spleen is an easy operation, and can always be relied on in arresting the hemorrhage, but these reasons alone would not warrant the removal of the organ if the hemorrhage can be arrested by conservative measures.

The surgical treatment of traumatic hemorrhage of the spleen naturally divides itself into: 1, Splenectomy; 2, partial splenectomy; 3, splenorrhaphy; 4, aseptic tamponade; 5, cauterization; 6, marginal crushing and suturing.

1. *Splenectomy.*—Splenectomy is the operation of necessity in the treatment of traumatic hemorrhage of the spleen, if the organ itself is diseased or in case the wound implicates the main trunk of the splenic artery. If the spleen is enlarged and softened, as is the case after acute infectious diseases, or, in consequence of chronic malarial intoxication, wounds cause very obstinate bleeding, which, owing to the textural changes which have taken place, resists all attempts at hemostasis short of splenectomy. In such an event, no time should be lost in the employment of conservative measures, and the diseased wounded organ should be promptly removed. The same treatment is to be pursued if the wound involves the hilus of the spleen and its principal artery.

2. *Partial Splenectomy.*—If the lower part of the spleen has been extensively crushed or lacerated, or if a transverse wound has divided two-thirds of the diameter of the organ, removal of the injured or partially detached part of the spleen is indicated. The amputation should be done by the use of the crushing forceps, and after excision the crushed tissue should be covered with omentum, which is sutured over it with catgut sutures. Suturing of the omentum over the stump is an additional means of hemostasis, and prevents harmful visceral adhesions.

3. *Splenorrhaphy.*—Suturing as a hemostatic has had a fairly good record, and will be resorted to in appropriate cases. The mattress suture or shoemaker's stitch is best adapted for this purpose. A round needle armed with catgut is to be used for this purpose. Bleeding from the punctures is reduced to a minimum by using the double catgut suture, so as to tampon the tract made by the needle with the suture material, which soon swells by the absorption of moisture. After the hemorrhage has been arrested in this manner, the cut surfaces are sutured together with a few separate catgut stitches. In bullet wounds, a circle of through-and-through mattress sutures will usually succeed in arresting the bleeding. The bullet wound itself in such cases should always be drained with aseptic gauze. If suturing is decided on, further loss of blood should be prevented by digital compression of the injured part of the spleen until the suturing is completed.

4. *Aseptic Tamponade.*—The aseptic tampon is often relied on by the surgeon in the management of troublesome parenchymatous hemorrhage that can not be controlled by more direct means, or when the source of hemorrhage is not accessible to more reliable hemostatic resources. In the case of wounds of the spleen,

this method of arresting the hemorrhage meets with a decided disadvantage in the absence of an adequate resistance to pressure. Notwithstanding the unfavorable mechanical conditions for effective tamponade, this hemostatic agent has given satisfactory results in many cases of traumatic hemorrhage of the spleen, in which it was relied on in arresting the bleeding. It will prove of value if the hemorrhage is venous or parenchymatous, but should never be relied on in bleeding from arteries of any considerable size, that is, in the treatment of arterial hemorrhage. The typical Mikulicz tampon is the one to be employed, as in this case the tampon can be removed with ease, and there is no danger of leaving a part of the tampon in the wound. The tampon also serves the useful purpose of a drain, and should be allowed to remain as long as it is deemed necessary to continue drainage. The size of the tampon can be diminished at any time it is considered safe to do so.

5. *Cauterization.*—The use of the actual cautery in the treatment of traumatic hemorrhage of the spleen has an exceedingly limited sphere of usefulness, if any. It is not reliable, and may inflict serious damage on important adjacent structures. The eschar which it produces interferes seriously with an ideal healing of the visceral wound. For these and other reasons it seems to me that the actual cautery should be resorted to only in exceptional cases as a hemostatic in the treatment of wounds of the spleen.

6. *Marginal Crushing of the Wound and Suturing.*—The most reliable procedure in arresting traumatic hemorrhage of the spleen in all cases in which the wounded organ can be saved is marginal crushing, followed by suturing the crushed margins with catgut. The hemorrhage is arrested the moment the forceps are applied, and the blood vessels in the crushed tissues are speedily obliterated by thrombosis, thus guarding against recurrence of the bleeding, and by uniting the crushed wound margins by suturing with catgut the visceral wound is placed in the most favorable condition for speedy healing and regeneration of the tissues lost by the injury and the operative treatment of the wound.

EXPERIMENTS WITH RENNET AND ANTIRENENE.*

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In 1899 Morgenroth published a paper entitled "The Antibody of Rennet," containing a description of certain work that he had done in support of Ehrlich's chemical theory of the toxin-antitoxin reaction. So far as I know, Morgenroth's work met with universal acceptance without having been subjected to experimental confirmation, nor did I think it worth while to confirm it or make any addition to what Morgenroth had found until the specific precipitates began to attract attention, when their study led me to experiment with antipeptone, antivenene and antirenene.

The antirenene was prepared solely for the purpose of securing the precipitate, but as I found it possessed the power of inhibiting the coagulant action of rennet on milk, I continued to investigate the subject until I found in it a confirmation of what Morgenroth had done, and found myself able to make a few additional contributions to the subject.

Morgenroth's experiments were performed on goats, which were injected with rennet prepared by Witte in Rostock, the activity of this rennet being 1-3,000,000. The sterility of the rennet solution was secured by the addition of iodin (1 c.c. of a 1-10 iodin solution to each 10 c.c. of the rennet solution permitted to stand 1 hour at room temperature), and no abscesses followed its employment. The goat was given increasing doses of the rennet solution administered by subcutaneous injection until 6.5 grams at a dose were administered. After each injection the temperature rose to about 41.4 C., without any disturbance of the general condition or appetite, and without any observable diminution of the body weight. Of the two goats thus treated, one produced a considerable quantity of the antibody, the other attained an extremely small degree of immunity, although both were subjected to exactly the same treatment.

The observation of Schepilewski, that an injection of sterile rennet produced amyloid disease, was not confirmed, as both of the goats remained healthy for more than a year after the close of the experiment.

Morgenroth's studies of the antirenene were made with the blood serum and milk of the goats. The standard rennet solution for testing the antibody consisted of a watery extract of the rennet powder in a 10 per cent. sodium chlorid solution, to which was subsequently added an equal quantity of glycerin and 10 per cent. sodium salt solution. It was found that such a solution contained 2 per cent. of the rennet powder, and could be kept for more than a year and a half unaltered. The presence of the antibody in the serum was tested on cow's milk saturated with chloroform by a long continued shaking in a shaking apparatus and then preserved in the cold.

The method for testing adopted by Morgenroth was as follows: His rennet had the power of coagulating milk in a proportion of 1 part in 3,000,000, but when the milk received an addition of 2 c.c. of the serum of an immunized goat, a proportion of rennet equal to 1-30,000 failed to produce coagulation, though a proportion of 1-25,000 produced a firm clot, so that the serum had the power to neutralize 100 times the coagulating rennet dose, and to thicken the milk 200 times the usual dose was required.

The serum from the other goat that did not attain a high degree of antirenene was so much less active that 2 c.c. inhibited in a proportion of 1-120,000 only. The antibody was extremely unstable, and when preserved with chloroform and kept in an ice chest, its activity disappeared in a few months.

My own experiments were conducted on a different plan and with different animals. Rabbits were chosen for the experiment, and at weekly intervals were given intraperitoneal injections of considerable quantities of the standard rennet solution. The rennet employed is a granular, dry powder of a yellow-cream color, freely soluble in water and physiologic salt solution. My standard solution consisted of a 5 per cent. solution in physiologic salt solution, saturated with chloretone. This preparation was found to be so stable that its strength did not alter on keeping for several months, and it was so active that 1/2,500 of a c.c. produced a firm coagulum in standardized milk in between one and two hours. The strength was, therefore, equivalent to 1-500,000. Each injection of 5 c.c. given to the rabbit contained 0.25 of a gram of the pure rennet.

* Read at the Fifty-fourth Annual Session of the American Medical Association, in the Section on Pathology and Physiology, and approved for publication by the Executive Committee: Drs. L. Hektoen, F. B. Wynn and W. S. Hall.

The rabbits on which my experiments were made weighed in the neighborhood of 1.5 kilograms each. Morgenroth does not give the weight of his goats, and I am not sufficiently familiar with goats to know exactly what they weigh, but presume an average goat would weigh about 50 kilograms. This being the case, the goats weighed approximately thirty times as much as the rabbits, and basing the calculation on body weight would presumably endure about thirty times as much rennet. My experiments were conducted without any knowledge as to the quantity of rennet administered by Morgenroth to his goats. On subsequently looking it up I found that the largest quantity they received was 6.5 grams. Since the rabbits received 0.25 of a gram at a dose, the goats on the same ratio should have received about 8 grams. This would suggest that the rabbits should have attained a higher degree of immunity and produced a stronger antibody than the goats, supposing their ability to produce the antibody about equal. We find, however, that the rennet with which Morgenroth performed his experiments had a strength of 1-3,000,000, or six times that of my rennet. It is thus evident that in proportion to their weight, my rabbits did not receive nearly as much rennet as Morgenroth's goats, and it is not surprising that I found the anticoagulant powers of their serum considerably less. This is, however, by no means a necessary inference, as Morgenroth showed that of his goats, one produced a serum whose anticoagulant power was 1-25,000, while the other was only 1-120,000, thus confirming what is a familiar observation to every one who has experimented with antibodies, viz., that different animals treated in the same way attain very different degrees of immunity, and very different kinds of antibodies in the blood.

Three rabbits were employed for the experiment. The first died after a single injection. At the necropsy I found an extensive serofibrinous inflammation of the pericardium, pleura and peritoneum, and with more or less pneumonia. The exudates contained several different bacteria. The second animal endured about five injections and then died with identical lesions. In the exudates and blood several different bacteria were found. Both the animals seemed to die early in the night, and when bacterioscopic examination showed that several bacteria were present in the exudates, it was not thought worth while to endeavor to isolate the one responsible for the infection. It is interesting to notice, however, that fibrinous exudates occurred in both these animals.

The third rabbit survived a number of injections of 0.25 of a gram of the rennet and was finally bled to death, the serum being carefully separated for study, and extracts of the different organs of the body made in order to determine whether either rennet or antirenene might be contained in the tissues. For this purpose extracts were made of the medulla oblongata, kidney, liver, pancreas, adrenal, bone marrow, lung, voluntary muscle, stomach, large intestine and small intestine. These extracts were prepared by adding to each fragment of tissue ten times its weight of physiologic salt solution (a gram was considered equivalent to 1 c.c. of salt solution). The organs were finely crushed in a mortar, being reduced to a pulp before the salt solution was added. The mixture was then placed in a test tube and kept in the cold over night. The rabbit, therefore, furnished blood serum, organic extracts and urine for further study.

In order that the investigations might be accurate, it was necessary to standardize the milk, and for this purpose chloroform and formaldehyd were first tried. The chloroform was found to be less reliable than was hoped, and the formaldehyd was found to diminish the coagulability of the milk. I, therefore, tried chloretone and found that by saturating the milk with this I was perfectly able to protect it against subsequent microorganismal contaminations, without in any way inhibiting its coagulating power.

As the layer of cream which soon rises and covers the surface of milk kept at the temperature of the body interferes with determining whether the milk has thickened from the presence of the rennet, I found it expedient to use "separator milk" from which the cream was removed. The reaction of the milk affects the action of the rennet; acid milk coagulated much more completely than neutral or alkaline milk. By securing milk fresh from the dairy and immediately saturating it with chloretone, I was able to secure a sufficiently accurate standard, as there was very little variation in the reaction of fresh separator milks, and the saturation with chloretone prevented the development of acidity by bacterial action. The reaction of the milks employed was acid, the acidity varying from 16 to 18 c.c. of normal caustic soda solution being required to neutralize one liter. The difference was so slight that though we tested it carefully it did not in any way seem to modify the action of the rennet, and it is thought not worth while to correct it.

It is well known that the temperature affects the action of rennet, which is much more energetic at high than at low temperatures. Morgenroth preferred to afford his rennet twenty-four hours in which to effect coagulation, keeping the milk in the meantime on ice. Inasmuch as we had eliminated the possibility of any bacterial change in the milk, we were able to keep it at the temperature of incubation, and found that 0.000002 of a gram of rennet added to 10 c.c. of milk invariably produced a firm clot in between one and two hours. We, therefore, adopted the temperature of 37 C. as a standard for the experiments.

In studying the action of the antibody we, therefore, had the following standard conditions:

1. A solution of rennet of which 0.000002 of a gram invariably coagulated 10 c.c. of milk kept at 37 C. in between one and two hours.

2. Milk of a reaction necessary for the appropriate action of the rennet and perfectly preserved from bacterial contamination or alteration either from the production of enzymes or the formation of acids, by saturation with chloretone. (Of this milk, 10 c.c. were used for each test).

The first series was an endeavor to determine whether the rennet injected into the animal was stored up in any of its tissues, and for this purpose 2 c.c. of each of the tissue extracts prepared was added to 10 c.c. of milk and incubated the appropriate length of time. This experiment we made as soon as the extract was prepared.

TABLE 1.—THE FOLLOWING MIXTURES WERE PERMITTED TO STAND FOR 12 HOURS:

10 c.c.	Milk	+	1 c.c.	Extract of	Kidney (freshly prepared)	= 0
"	"	+	"	"	Liver	= 0
"	"	+	"	"	Pancreas	= 0
"	"	+	"	"	Adrenal	= 0
"	"	+	"	"	Bone marrow	= 0
"	"	+	"	"	Lung	= 0
"	"	+	"	"	Voluntary muscle	= 0
"	"	+	"	"	Brain	= 0
"	"	+	"	"	Blood serum	= 0
"	"	+	"	"	Urine	= 0
"	"	+	"	"	Large intestine	= 0
"	"	+	"	"	Small intestine	= +
"	"	+	"	"	Stomach	= +

The coagulation produced by the extracts of stomach and small intestine probably depends on

the presence of rennet naturally formed in the stomach. No rennet existed in any of the other extracts, in the blood serum or in the urine. A similar series was made after permitting the sodium chlorid solution to act on the crushed organs for about 20 hours.

TABLE 2.

10 c.c. Milk + 1 c.c. Extract of Kidney*	=0
" " + " " " Liver	=0
" " + " " " Pancreas	=0
" " + " " " Adrenal	=0
" " + " " " Bone marrow	=0
" " + " " " Lung	=0
" " + " " " Voluntary muscle	=0
" " + " " " Brain	=0
" " + " " " Blood serum	=0
" " + " " " Urine	=0
" " + " " " Large intestine	=0
" " + " " " Small intestine	=0
" " + " " " Stomach	=0

* After 24 hours' maceration.

The next experiments were made for the purpose of determining whether any of the organic extracts contained important quantities of antirenene, and were made with extracts which had been allowed to stand in the cold for about twenty hours.

TABLE 3.—THE FOLLOWING WERE PERMITTED TO STAND FOR 3 HOURS:

10 c.c. Milk + 1 c.c. 20-hour Extract of:	
Kidney + rennet 0.000002 gr	=+
Liver + rennet 0.000002 gr	=+
Pancreas + rennet 0.000002 gr	=+
Adrenal + rennet 0.000002 gr	=+
Bone marrow + 0.000002 gr	=+
Lung + rennet 0.000002 gr	=+
Voluntary muscle + rennet 0.000002 gr	=+
Brain + rennet 0.000002 gr	=+
Large intestine + rennet 0.000002 gr	=+
Small intestine + rennet 0.000002 gr	=+
Stomach + rennet 0.000002 gr	=+

Although these experiments were crudely made, they seemed to indicate the absence of important quantities of antirenene in the tissues of the rabbit's body. It might be well to remark that the softest coagulum in the series was that in the tube to which the bone marrow had been added.

The next experiments were made to determine the ability of the blood serum to inhibit the action of the rennet. I find that my method of experimentation differs markedly from that of Morgenroth. Morgenroth used a measured quantity of milk containing an equal proportion of serum and added varying quantities of the rennet. I preferred to experiment by a method more nearly resembling that by which the antitoxic unit is determined in the estimation of the value of antidiphtheritic and antitetanic serums. I, therefore, employed 10 c.c. of milk to which was added exactly the quantity of rennet known to effect its coagulation, and then varying quantities of serum, until I determined the least quantity that would inhibit coagulation.

TABLE 4.—DURATION OF THE EXPERIMENT 3 HOURS. TEMPERATURE 37 C.

10 c.c. Milk + 0.00002 gr. rennet + serum 1 c.c.	=0
" " + " " " + " 0.7 c.c.	=0
" " + " " " + " 0.6 c.c.	=0
" " + " " " + " 0.5 c.c.	=0
" " + " " " + " 0.4 c.c.	=0*
" " + " " " + " 0.3 c.c.	=0†
" " + " " " + " 0.2 c.c.	=+
" " + " " " + " 0.1 c.c.	=+
" " + " " " + " 0.09 c.c.	=+
" " + " " " + " 0.08 c.c.	=+
" " + " " " + " 0.07 c.c.	=+
" " + " " " + " 0.06 c.c.	=+
" " + " " " + " 0.05 c.c.	=+
" " + " " " + " 0.04 c.c.	=+
" " + " " " + " 0.03 c.c.	=+
" " + " " " + " 0.02 c.c.	=+
" " + " " " + " 0.01 c.c.	=+
" " + " " " + " 0.001 c.c.	=+
" " + " " " + " 0.0005 c.c.	=+
Control 10 c.c. milk + 0.00002 gr. rennet + serum	=0

* Soft clot. † Very soft clot.

In this way I showed that the serum effected a distinct inhibition of coagulation, causing the rennet to become inactive in tubes containing 0.5 c.c., or more, of the serum.

The next series of experiments had to do with the specific precipitate, which I expected to find much more delicate, as a means of determining the presence of the antibody rather than the interference with coagulation. Dilutions of the serum and rennet in which the proportions were known, were prepared, placed in small test tubes and kept at the standard temperature. The result was not delicate, as I had anticipated, as is shown by the following table. The quantities of rennet and serum were each diluted with several cubic centimeters of physiologic salt solution, poured together, well shaken, placed in a narrow test tube, and incubated for twenty-four hours:

TABLE 5.

0.00002 gr. rennet + 0.4 c.c. serum	=+
" " " + 0.3 c.c. serum	=+
" " " + 0.2 c.c. serum	=+
" " " + 0.1 c.c. serum	=+(?)
" " " + 0.01 c.c. serum	=0
" " " + 0.005 c.c. serum	=0
" " " + 0.0033 c.c. serum	=0
" " " + 0.0025 c.c. serum	=0
" " " + 0.002 c.c. serum	=0
" " " + 0.001666 c.c. serum	=0
" " " + 0.00142 c.c. serum	=0
" " " + 0.00125 c.c. serum	=0
" " " + 0.0011 c.c. serum	=0
" " " + 0.001 c.c. serum	=0

The large quantity of serum required to inhibit the action of the rennet perplexed me, as it seemed not to be in keeping with what was known about other antibodies. It, therefore, occurred to me that the action of the rennet on the milk might take place too rapidly to afford anything but an overwhelming quantity of the serum an opportunity to inhibit it, and that if I would make mixtures of rennet and the antibody in varying proportions and permit them to stand at the temperature adopted for the standard for a number of hours, the rennet might be destroyed by the antibody in very much smaller quantities than was necessary when both were immediately added to the milk. I, therefore, prepared a number of such mixtures and a correspondingly great dilution of rennet, permitted them to stand over night in the incubator and then added the appropriate quantities to the milk. The result showed that under these conditions the action of the antibody on the rennet was very energetic and entirely confirmed by expectations. Instead of requiring 0.5 c.c. to inhibit coagulation, I now found 0.0005 c.c. to be sufficient, this being the least quantity investigated.

TABLE 6.—TIME, 3 HOURS. TEMPERATURE, 37 C. CONTROL. 10 C.C. MILK + (0.00002 GR. RENNET INCUBATED 24 HOURS) =+.

10 c.c. milk + (0.00002 gr. rennet + 0.4 c.c. serum)	=0
" " + " " " + 0.3 c.c. serum)	=0
" " + " " " + 0.2 c.c. serum)	=0
" " + " " " + 0.1 c.c. serum)	=0
" " + " " " + 0.01 c.c. serum)	=0
" " + " " " + 0.005 c.c. serum)	=0
" " + " " " + 0.0033 c.c. serum)	=0
" " + " " " + 0.0025 c.c. serum)	=0
" " + " " " + 0.002 c.c. serum)	=0
" " + " " " + 0.00175 c.c. serum)	=0
" " + " " " + 0.001425 c.c. serum)	=0
" " + " " " + 0.001225 c.c. serum)	=0
" " + " " " + 0.00111 c.c. serum)	=0
" " + " " " + 0.001 c.c. serum)	=0
" " + " " " + 0.0005 c.c. serum)	=0

I was very anxious to determine how much less than this quantity would inhibit the coagulating power of the rennet. But at this point my experiments were interrupted by pressure of other work and the matter was dropped for several weeks. When I was able to return to it again, I found that what Morgenroth had discovered regarding the instability of the antirenene was correct, and that my serum had entirely lost its power, either when added to the milk or when added to the rennet, to interfere with coagulation.

SUMMARY.

The experiments confirm Morgenroth's discovery that the repeated introduction of rennet is followed by the formation of an antibody inhibiting its action. They show that properly prepared mixtures of rennet and antirenene give a specific precipitate, and show, I think for the first time, that the action of the antirenene is infinitely more active when the two are mixed and allowed to stand for some time before being added to the milk than when immediately added to the milk.

This is in thorough keeping with what was observed by Martin and Cherry regarding the interaction of venom and antivenene. I am also able to confirm Morgenroth's observation of the instability of the antibody.

DISCUSSION.

DR. JOSEPH MCFARLAND, Philadelphia—After the use of the chloretone in the milk I found that I was able to keep the milk as long as I liked. Owing to the negligence of the attendant in not cleaning up the bottles on the stand in my laboratory some of them stood for eight weeks without contamination. The milk simply dried up. I have found chloretone one of the best reagents for the preservation of serums, milks, urines and organic extracts from bacterial contamination. Bacteria will not grow in any of these when the chloretone has been added and there is no injurious chemical action.

DR. L. HEKTOEN, Chicago—I would like to inquire whether the rabbit serum has any coagulative power.

DR. J. W. FOSS, Phoenix, Ariz.—Will anything short of a saturated solution of chloretone act as a preservative?

DR. JOSEPH MCFARLAND, Philadelphia—Replying to the first question, normal horse serum contains a body that slightly inhibits the coagulative power of rennin, but rabbit serum does not.

As to the chloretone, I always use the saturated solution because that is the easiest to prepare.

THE PROTOPLASMIC ACTIVITY OF THE RENAL EPITHELIUM,

AS DETERMINED BY THE ELIMINATION OF PIGMENTS INJECTED INTO THE CIRCULATION.*

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INTRODUCTION.

The question of the functional activity of the renal epithelium is ever one of deep interest, both to the physiologist and to the pathologist.

It will be remembered that Bowman's theory concerning the separation of the urine by the kidney was originally founded on anatomic findings entirely and not on experimental evidence. According to this view, the glomeruli separate the watery portion of the urine and the freely diffusible substances, while the specific ingredients of the urine, viz., the urea, uric acid, etc., are secreted by the cells of the uriniferous tubules.

Bowman's theory was replaced for a time by that of Ludwig when the latter investigator and his school showed the close relationship which exists between the circulation of blood in the kidney and the amount of urine separated. This theory held that the separation of urine by the kidney is purely a physical process, the blood-pressure in the glomerular capillaries causing all the ingredients of the urine to filter through into Bowman's capsule in very dilute solution. During the passage of this dilute solution down the uriniferous tubules the water was supposed to diffuse back from the urine into the lymph, so that the urine becomes more concentrated as it enters the pelvis of the kidney.

Further investigation of the subject soon showed that alterations in the general arterial blood-pressure do not always cause corresponding changes in the amount of urine formed, while the latter may be influenced by conditions which do not affect the former. These facts called the first part of Ludwig's theory seriously into question. The latter part, pertaining to the diffusion of water from the uriniferous tubules into the lymph, was demonstrated to be impossible, as the urine has a greater osmotic pressure than the lymph, and if any diffusion takes place, the water would pass in the opposite direction to that contended by Ludwig.

Heidenhain then put forward a theory which is in part a revival of Bowman's hypothesis in that the specific ingredients of the urine are held to be secreted by the protoplasmic activity of the cells lining the uriniferous tubules. Heidenhain went still further and held that the water and freely diffusible constituents of the urine are secreted by the flat epithelium covering the glomeruli and that these are not merely filtered by a physical process alone, although the influence of changes in the general or local circulation on the flow of urine is fully recognized.

Both of these theories have been modified from time to time, and while there may be minor differences, there are two main views held at the present time as to the functional activity of the kidney:

(1) *The Filtration-Absorption Theory* or *Modified Ludwig's Theory.*—This holds that all the ingredients of the urine in very dilute solution are filtered through the capillary wall and the epithelium covering the glomerulus, and that the water and chlorids are absorbed by the cells lining the uriniferous tubules, while the urea, uric acid, phosphates, sulphates, etc., pass on to the pelvis of the kidney in more concentrated solution.

According to this view, the epithelium of the uriniferous tubules is not excretive, but is only concerned in absorption. These cells are supposed to have a selective power in absorbing certain ingredients like the chlorids, while other diffusible substances like urea pass on. If this theory be correct, Heidenhain calculated that fully 70 kilos of water must filter through the glomeruli daily.

(2) *The Excretory, Vital,* or *Bowman-Heidenhain Theory.*—It is contended by those who hold to the other explanation of the function of the kidney that only the water and inorganic salts are separated by the glomeruli. The glomerular epithelium is supposed to be permeable to certain substances and not to others, so that the fluid which collects in the capsule of Bowman contains the inorganic salts in the relative proportion in which they occur in the urine. The cells lining the tubules, and especially those of the contorted tubules, are held to separate the specific ingredients of the urine by an excretory action, i. e., by a protoplasmic activity similar to the secretory activity of other glands.

The main point at issue betwen these diverse views is whether the renal epithelium is absorptive like that lining the intestine, or excretory in function. If the former is correct, then water and salts are absorbed from the urine into the lymph; if the latter is correct, then the metabolites and possibly some of the salts of the urine are separated by protoplasmic activity from the lymph into the urine as it passes down the tubules.

In trying to determine which of these theories is correct most of the work in recent years has been carried

* Read at the Fifty-fourth Annual Session of the American Medical Association, in the Section on Pathology and Physiology, and approved for publication by the Executive Committee: Drs. L. Hektoen, F. B. Wynn and W. S. Hall.

on by studying the molecular concentration of the urine under different conditions and comparing it with that of the blood. Much has also been done in studying the action and elimination of different salts.

Unfortunately, there is no ingredient of the urine which can be traced through the renal epithelium by microchemical methods. Bowman[1] and Von Wittich[2] described the presence of uric acid crystals in the epithelial cells lining the uriniferous tubules of birds, but it has since been contended by Schmidt[3] that these observations are incorrect, and that uric acid crystals only occur within the lumen of the tubule and on, but not within, the protoplasm.

Heidenhain[4] made use of a soluble stain which can be injected into the circulation without any harm and can be precipitated in the kidney by perfusing it with absolute alcohol. Sodium sulphindigotate (indigo carmine), when injected into the circulation, appears in the urine in from 2 to 3 minutes. Heidenhain found that if the kidney be quickly excised 5 minutes after the injection of the stain and perfused with absolute alcohol, the pigment is precipitated chiefly in the medulla of the kidney. When the spinal cord was cut prior to the injection so as to lower the blood-pressure and thereby stop the flow of urine, he found the pigment chiefly in the cortex and on microscopic examination found the precipitated pigment granules principally within the lumen of the convoluted tubules, and to a less extent in the epithelial cells lining them.

Heidenhain concluded from these experiments that this pigment is eliminated by an excretory activity of the cells lining the convoluted tubules. While it does not necessarily follow from this that urea is excreted in the same way, nevertheless, this would seem highly probable from the large proportion of this metabolite in the urine if such excretory activity can once be positively established.

Other experimenters have not always obtained the same results from injecting indigo carmine that Heidenhain did. The results obtained with this dye are extremely variable, but admitting that they are uniform, quite a different interpretation has been placed on them. The pigment precipitated in the kidney has been found to occur chiefly in the lumen of the uriniferous tubule and in that part of the renal epithelium which immediately borders on the lumen. It does not occur in such abundance in these cells toward the basement membrane. It is contended by some[5] that the presence of these granules in this part of the cell might be due to absorption from the urine within the tubule as readily as to excretion from the lymph into the urine. This view is rendered more plausible by the fact that by varying the conditions of the experiments the glomerulus is often found to be stained.

PLAN OF EXPERIMENTATION.

The experiments presented in this paper were undertaken with the idea of attempting to clear up this point, viz., whether the protoplasmic activity of the renal epithelium is concerned in absorption or in excretion in the elimination of pigments injected into the systemic circulation.

Different methods were used to stop the free flow of urine with the idea of diminishing the amount of water separated by the glomeruli without interfering with the protoplasmic activity of the epithelium lining the tubules. In one experiment the spinal cord was cut so as to lower the blood-pressure and thereby stop the flow of urine. In two others advantage was taken of the anuria from surgical shock. It is a matter of common experience in performing experiments on the kidney that often the urine does not flow for a considerable time after a kidney or ureter has been exposed, and at times it is necessary to inject a diuretic or physiologic salt solution to establish the flow. As the amount of pigmentation of the kidneys varies in different animals considerably, even when the conditions of experimentation are identical, it is obviously desirable to stop the flow from one kidney without interfering with its circulation, while the other one continues to act normally. This is far preferable to the method of stopping the flow in both kidneys, as it allows comparison in the same animal.

In three experiments one renal artery was compressed between the fingers for one-half to one minute at a time and repeated if necessary. This usually causes a temporary cessation in the flow of urine without interfering with the blood supply, as no injury is done to the artery. Unfortunately, when fluids are subsequently injected the flow of urine sometimes starts again, but is never as great as on the normal side.

In eight experiments the ureter of one side was connected with a mercury manometer by means of a cannula and the urine allowed to flow until the mercury in the manometer ceased to rise. It requires a pressure of 30-40 mm. Hg. to stop the flow of urine. In this way the ureter and pelvis are distended and the outflow from the uriniferous tubules is thus obstructed and comes to a standstill. Normally the pressure in the ureter necessary to stop the flow of urine does not exceed 40 mm. Hg., but under the influence of diuretics it may go as high as 60 or 70 mm. of Hg.

Several of my experiments were performed before the publication of Cushny's paper[6] on the elimination of salts by the kidney when the ureter is obstructed, and until then my attention had not been called to the interference with the renal circulation by obstructing the ureter. Lindemann[7] showed that a pressure of 100 to 200 mm. of Hg. in the ureter causes the kidney to swell up and interfere seriously with the renal circulation, as the outflow of blood from the renal vein is greatly diminished, but if this pressure does not exceed 50 mm. Hg. the venous outflow is not reduced by 10 per cent. In my later experiments a T cannula was tied in the obstructed ureter after a method devised by Cushny, so that one arm could be connected with a manometer, while a short piece of rubber tubing on the other arm, with a screw pinch cock, allowed the urine secreted under pressure to escape and in this way the pressure was kept uniformly between 35 and 40 mm. of mercury.

An effort was made to see if the protoplasmic activity of the renal epithelium could be lessened by atropin. It is supposed by some that this alkaloid checks the renal activity in the same way that it does that of most other glands. Careful urea determinations were made of the urine collected from the ureters for five-minute periods before and after the administration of atropin in three experiments, but there was no diminution in the quantity of urine or of urea, although the flow of saliva was completely stopped and could not be excited in any way.

1. Bowman: Phil. Trans., London, 1842.
2. Von Wittich: Arch. f. mik. Anat., 1875, Bd. xi.
3. Schmidt: Arch. f. d. Ges. Physiologie, 1890, Bd. xlviii.
4. Heidenhain: Hermann's Handbuch d. Physiologie, vol. v.
5. Starling: Schäfer's Text-book of Physiology, vol. i.
6. Cushny: Brit. Journ. of Phys., vol. xxviii, No. 6.
7. Lindemann: Beiträge z. path. Anat. und Phys., xxi, p. 500, 1897.

Pilocarpin also fails to increase the amount of urine or of urea.

SELECTION OF A SUITABLE PIGMENT.

Experiments with sodium sulphindigotate (indigo carmine) are so extremely variable that satisfactory results were never obtained, although it has been tried in nine experiments not included in this paper. Care was taken to repeat exactly the conditions as described by Heidenhain, but the trouble seems to lie in the composition of the pigment and the change which it undergoes under the influence of the living tissues. The living cells appear to reduce it to a colorless substance. This change is so great that even though the kidney is colored blue when it is first cut out and perfused with absolute alcohol, it soon loses color, and sections mounted from it show no color granules. The pigment was the purest obtainable from different sources, but the results were always the same, even though large amounts were injected (5 c.c. to 7.5 c.c. of saturated solution per kilo of body weight).

Starling[5] recommends the use of carmine dissolved in a weak solution of sodium hydroxid. Carmine has the advantage of being more complex in its composition and less diffusible, so that it can be traced through the tissues more readily. It is also very much more stable; is not reduced by the tissues, and can be more completely precipitated by absolute alcohol than can indigo carmine.

The only disadvantages of carmine are its comparative insolubility and the effect of the sodium on the circulation. A saturated solution in weak NaOH solution rarely contains more than 1 per cent. of carmine, and may contain much less if made hastily. When such a solution is rapidly injected directly into the vein it causes the heart to beat slowly and a fall of pressure ensues. This can be obviated by making the injection slowly, and with this precaution from 5 c.c. to 7 c.c. of a saturated solution of carmine in 0.1 per cent. NaOH may be injected for each kilo of body weight. It is very essential that the solution be freshly prepared, as it decomposes very readily.

To avoid the effect on the heart of any free alkali, commercial sodium carminate was tried, but proved less satisfactory than a fresh solution of carmine. The tissues were not so deeply stained and the stain was more diffuse and not so completely precipitated by absolute alcohol.

Sometimes when carmine has been injected into the circulation the urine and kidneys remain remarkably free from the pigment, although the other tissues are stained and the blood-pressure has remained normal throughout. This caused us to try other materials which can be used for the microchemical examination of tissues.

As large amounts of potassium ferrocyanid can be injected directly into the circulation without any injurious effect, this salt was used, and after it had appeared in the urine the kidneys were excised and perfused with a weak solution of ferric chlorid containing a little free HCl. The entire organ turned blue after a time, but sections showed a diffuse stain in some places, with deeply stained material in the lumen of the straight tubules. The results were less satisfactory than those obtained with carmine.

The injection of a soluble salt of iron (citrate of iron and ammonium) was next undertaken, and after the iron had been found in the urine for some time the animal was killed. One kidney was then perfused with a weak solution of ammonium sulphid, and the other was cut into very thin pieces and placed in a weak solution of potassium ferrocyanid acidulated with HCl. The kidneys showed marked precipitates of black in the one kidney and blue in the other, but microscopic sections of the organs were not as satisfactory as those made from experiments in which carmine was used.

Recently a freshly prepared liquor carmini (U. S. P.) has been used. This is a 6.5 per cent. solution of ammonium carminate from which all free ammonia has been driven off by gentle heat or gaseous diffusion. It has the advantage that it contains much more carmine than is possible to get in solution otherwise, and does not lower the blood pressure if injected slowly. It has the disadvantage over a solution of sodium carminate that it increases the flow of urine, probably in the same way that saline diuretics do, as it contains 35 per cent. of glycerin. This also causes a more diffuse staining of the glomeruli than is seen after the injection of the other pigments, although two parts of physiologic salt solution were added to the liquor carmini for injection. At first 5 c.c. or 6 c.c. of liquor carmini per kilo of body weight were injected, but this causes such diffuse pigmentation that 4 c.c. per kilo is a better proportion. Less than this does not give such good results.

In the experiments with carmine and indigo carmine the kidneys were perfused with absolute alcohol through cannulæ tied in the renal arteries. At first this was done with a syringe, but it was found much better to make the injections by gravity, using a separating funnel at a height of about six feet and allowing the absolute alcohol to perfuse for an hour, the kidney being covered with alcohol. The alcohol flowed freely from the renal vein and some escaped from the ureter. The organ was then cut open and thin pieces were placed in a large excess of absolute alcohol. These were then imbedded in paraffin and mounted unstained, so that none of the pigment could diffuse out.

When comparisons were made between the two kidneys the cannulæ of the two renal arteries were connected by a Y tube with one column of alcohol, so that the pressure and amount of absolute alcohol perfused were as nearly equal as is possible to obtain.

In precipitating the iron and potassium ferrocyanid in the kidney the precipitating solution was perfused by gravity and the tissues were then fixed by absolute alcohol and mounted in the same way.

One important fact to remember in this connection is that the vasa recta (i. e., the arterial twigs running between the straight uriniferous tubules) receive much more alcohol when the kidney is perfused than the capillaries about the convoluted tubules. I have determined this definitely by injecting a gelatin mass colored with soluble Prussian blue, with exactly the same pressure and conditions used for perfusing with alcohol. The kidney was warmed by perfusing with physiologic salt solution at 40 C. and it was kept covered with the same. When the gelatin was perfused it flowed freely from the renal vein and the pelvis and ureter were colored blue. The gelatin was then made to set by plunging the kidney in very cold physiologic salt solution, while the pressure in the renal artery was kept up.

On section the blue was found chiefly in the vessels between the straight tubules, in the interlobular arteries and in the capillaries of the glomeruli, but not in the second set of capillaries (renal portal capillaries) about the contorted tubules. This may account for the more complete precipitation of pigment in the straight tubules, and especially just at the junction of the cortex

with the medulla. It is here that the greatest amount of pigment is found precipitated in these experiments.

THE ELIMINATION OF THE PIGMENT.

Indigo carmine, potassium ferrocyanid or carmine may be detected in the urine flowing from the ureter in from two and a half to three minutes after it has been injected into the jugular vein. In the case of iron it requires a slightly longer time—from four to five minutes. The tissues are all diffusely stained after the injection of carmine or indigo carmine. When the kidney is cut open after it has been perfused so as to precipitate the dye, it is seen to be deeply colored, mostly in the medulla and where the latter joins the cortex. On section most of the pigment is found within the uriniferous tubules. The question at once arises, is this pigmentation merely the result of diffusion, or is this foreign substance eliminated by the kidney and gotten rid of in this way?

In the case of carmine it can at once be stated that this is an excretory activity and not merely a diffusion. This statement is based on the observation that pigment granules can be seen within the epithelial cells of the organs of excretion, viz., the kidney, liver and colon, while we do not find them in the cells of the pancreas, spleen or muscles. When moderate amounts of the pigment have been injected these granules do not occur in the cells lining the stomach or small intestine, although the vascularity of all these tissues is fully as great as that of the excretory organs. Furthermore, the contents of the colon and sigmoid flexure show the presence of the dye, while the contents of the stomach and small intestine are not colored unless very large amounts of carmine have been injected. Sections of the tissues not concerned in the elimination of the stain show the pigment granules within the blood-vessels and perivascular lymph spaces, but not within the cells of the parenchyma.

THE MANNER OF ELIMINATION BY THE KIDNEY.

Attention may next be directed to determining whether the elimination by the kidney is the result of filtration through the glomeruli or the result of a protoplasmic activity of the epithelium lining the uriniferous tubules. Neither one of these processes precludes the possibility of the other, and both may operate at the same time. This is often lost sight of by those who endeavor to prove a favorite theory.

When a kidney is removed one-half hour after the injection of carmine into the systemic circulation; is perfused with absolute alcohol for an hour in the manner before mentioned, so as to fix the cells and precipitate the stain *in situ;* and is then imbedded, sectioned and mounted in agents which can not dissolve the stain, most of the pigment is found in the straight tubules of the medulla and those of the medullary rays reaching from the medulla into the cortex. The convoluted tubules of the cortex contain less pigment and it only occurs in places while the glomeruli are quite free from it.

The precipitated carmine occurs chiefly in the lumen of the convoluted tubule and in that part of the epithelial cells which borders on the lumen. The part of the epithelial cells which is nearest the basement membrane is not free from pigment, but with the low power appears to be uniformly tinted.

As stated before, this condition is taken to indicate absorption by those who hold to the filtration theory, while it is interpreted as evidence of excretory activity by those who hold the Bowman-Heidenhain theory.

The experiments presented in this paper seem to indicate that these granules are in the process of excretion rather than of absorption. This view is based on the following facts:

1. The pigment in the renal epithelium of the contorted tubules is found chiefly, but not exclusively, in the part bordering on the lumen. If these cells be examined with a high power (1/12 oil immersion lens), the basal part shows not only a diffuse stain, but fine carmine granules. These can be found not only in cells containing large granules, but in many cells in which there are no coarse granules near the lumen. The difference in the size of these granules is fully as marked as the variation in the size of the neutrophile and eosinophile granules of leucocytes. Why is there this difference in the size of these precipitated carmine granules?

It has been pointed out that in perfusing the kidney with a pressure sufficient to cause a free flow from the renal vein, the vasa recta and the interlobular arteries receive most of the perfused fluid, while the capillaries about the convoluted tubules receive very little. Some of the perfused fluid filters through the blood-vessels of the glomeruli and escapes from the uriniferous tubules into the ureter even when absolute alcohol is used. It would seem possible, therefore, that the pigment is more completely precipitated in the straight tubules and outer part of the convoluted tubules than in the basal part of the latter. This would only explain the difference in the size of the granules, but not the difference in the amount of pigment in these two parts of the cells lining the contorted tubules.

This difference in the distribution of the pigment does not necessarily indicate that it is absorbed by these cells. It will be recalled that in the mammary gland during active secretion the fat globules accumulate in that part of the cell next to the lumen of the acini, and are not uniformly distributed in the part near the basement membrane. The same thing is true of the zymogens of most glands which pour out external secretions. No one would contend from this condition alone that these products of gland activity are absorbed and not secreted.

2. Against the view that these pigment granules are being absorbed, we would point to the fact that some cells in the liver and many cells in the colon show the presence of such granules. If the amount of carmine injected is very large this pigment is also found in the epithelial cells lining the stomach and intestine, but when moderate amounts are used the dye is excreted chiefly by the kidneys and colon. The contents of these hollow viscera show that the carmine is excreted. Other tissues such as the pancreas and spleen, which are just as vascular, do not show the carmine granules in the cells. It can not be contended that the carmine granules in the cells lining the alimentary tract are being absorbed. It is much more probable that the epithelial cells of the uriniferous tubules like those of the colon are active in excreting this foreign substance from the blood.

3. If the ureter be obstructed so that the outflow of urine is stopped without interfering with the circulation of the kidney, the renal epithelium is free to act while the separation of fluid by the glomeruli is reduced to a minimum. When carmine is injected under these circumstances the amount of pigment in the obstructed kidney is much greater than in the normal one. The cortex is more deeply colored than in the unobstructed kidney, but still contains less than the medulla. Sections show most of the pigment in the lumen, as very

little is flushed out. The amount of pigment in the cells of the contorted tubules, and especially toward the basement membrane, is relatively increased. It might be contended that this is due to increased absorption under pressure, but the concentration of the urine which accumulates in the pelvis of the kidney when the ureter is obstructed argues strongly against the view that a dilute urine continues to be actively separated by the glomeruli when the ureter is obstructed. This has been determined by comparing the amounts of urine and urea respectively given off by the normal and by the obstructed kidney. My own experiments are not in accord with those of Cushny on this point.

3. When the free flow of urine is stopped by cutting the spinal cord and thereby lowering the blood-pressure, or as the result of surgical shock, or as the result of compressing the renal artery for a short time without injuring the intima, the injection of carmine into the circulation results in far more of this pigment being found in the uriniferous tubules and in the cells lining them than could be accounted for by a slight transudate which might continue from the glomeruli with complete resorption of the water. Indeed, when the flow of urine has been stopped on one side by the temporary compression of the renal artery the kidney of that side shows fully more carmine than its fellow. This condition would be reversed if the carmine in the cells were the result of absorption from a dilute urine.

4. In none of these cases does the stain show extensively in the glomeruli or capsule of Bowman when carmine dissolved by weak sodium hydroxid has been used. Even when the ureter has been obstructed and the kidney is deeply pigmented as contrasted with its fellow, the glomeruli do not show the pigment granules one would expect to find if the filtration through these structures had continued. If all the pigment found in the uriniferous tubules had come from the glomeruli and none from the epithelial cells, then the glomeruli should also be stained when their activity is stopped by obstruction to the outflow of urine from the kidney.

When ammonium carminate held in solution by glycerin is used the glomeruli show carmine granules, whether the ureter is obstructed or not. This solution has a greater diuretic action than any other substance used, and it is probably in more complete solution and more diffusible than the carmine dissolved by soda.

5. The glomeruli do not show a deposition of carmine granules, even when the animal is killed shortly after the injection of carmine dissolved by sodium hydroxid. In one experiment the kidney was excised four minutes after the injection of carmine and one minute after it appeared in the urine; in others after intervals of 10, 15 and 20 minutes, but in none of them have the glomeruli been stained as has been described with indigo carmine.

In conclusion it should be stated that these experiments merely indicate that pigments are excreted by a protoplasmic activity of the renal epithelium. They do not contend that none of the pigment is filtered through the glomeruli. On the other hand, when ammonium carminate is used the sections indicate that this is the case, and Starling's experiments with indigo carmine show the same thing. As stated before, we should bear in mind that both processes may operate at the same time.

The elimination of pigments by the kidney does not afford a method of determining positively and finally whether the rodded epithelium is excretive or absorptive in function, but the former seems the more probable. Of course, urea and the metabolites of the urine may be handled in a different way from foreign substances injected into the circulation. However, it seems improbable that the cells lining the uriniferous tubules are concerned exclusively in absorption, as has been contended recently.

DISCUSSION.

DR. E. R. LECOUNT, Chicago—I would like to ask if the arrangement of the pigment granules in the secretory cells of the convoluted epithelium was in rows, at right angles to the channel. We can recall that in various kinds of secretory epithelium it has been proven that there are intracellular passages. In the pancreas, liver cells and others there are pathways which lead into the channels. The renal epithelium is striated and the striations are at right angles to the tubules. I do not know that it has been proven that this is due to the existence of passageways, but it would be interesting to determine that point.

DR. W. S. CARTER, Galveston, Texas—I have not observed any such arrangement. The coarse pigment granules occur in great numbers near the lumen of the tubule, and where we have these very fine ones they are very evenly distributed through the protoplasm.

THE PHARMACOLOGIC ACTION OF DRUGS;

IS IT DETERMINED BY CHEMICAL STRUCTURE OR BY PHYSICAL CHARACTERS?*

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A close connection between therapeutics and chemistry has been recognized so long and has survived so many changes in each of these subjects that it was only natural that in the last half century the infant science of experimental pharmacology should renew the old alliance. Accordingly, soon after the idea of molecular structure and the use of structural formulæ were introduced in chemistry, the question was broached whether the effects of drugs in the organism could be co-ordinated with their molecular constitution. The answer has very generally been in the affirmative, and the view that there exists a direct relationship between chemical configuration and pharmacologic action has been supported by a number of important memoirs. Some sanguine advocates have even expressed the hope that with advancing knowledge of pharmacology the time may arrive when the action of a remedy will be deduced from its structure alone, and when the quest for new remedies will no longer be pursued in the haphazard way of the past, but with the definite object of forming a molecule of a certain structural arrangement, which will then necessarily possess the action desired.

Before considering how far this theory has proved to be correct, it may be well to examine what is meant by the structural formulæ which adorn so many pharmacologic treatises, but which I fear fail to enlighten as many readers as they repel. These may be regarded as a sort of shorthand statement of a series of reactions which the compound has been found to present; the structural formula, like a family tree, indicates the origin of the molecule, the products that may be expected from it when subjected to such processes as oxidation or reduction, and what compounds it is likely to

* Read at the Fifty-fourth Annual Session of the American Medical Association, in the Section on Materia Medica, Pharmacy and Therapeutics, and approved for publication by the Executive Committee: Drs. S. Solis-Cohen, George F. Butler and N. S. Davis, Jr.

enter into combination with. On the other hand, the structural formula, again like a family tree, takes no account of the physical properties of the individual, such as the solubility, volatility, etc. For example, the formula of ethyl alcohol (CH_3CH_2OH) indicates its relationship to ethane (CH_3CH_3), acetic acid (CH_3COOH), etc., and suggests that it will tend to form combinations with acids, etc.; but if this substance were unknown and its formula only were before us, one could not infer with any certainty whether it would be soluble in water in any given proportion, or how volatile it would prove to be. The molecular structure may thus indicate the action of a substance in so far as that is determined by the combinations formed by the drug in the organism, but can give no clue to those effects which are due to its volatility, solubility or other physical properties. Now, it is obvious to every one that these influence the action of drugs very considerably; for example, the volatility of ether and chloroform determines largely their availability as anesthetics, while the less volatile nature of chloral and paraldehyd precludes their use for this purpose in man, but renders them more suitable than their more volatile relatives for use as hypnotics.

The importance of these physical factors has always received some recognition, for it has always been admitted that the relation between structure and action only holds as far as the physical characters of the bodies do not diverge too widely. Thus the lower alcohols all have a characteristic action on the central nervous system, which is lost as the molecule becomes more complex in the higher members of the series, and this has been explained by the molecule in the latter being absorbed less readily through its smaller solubility in the body fluids. But while admitting that the physical properties influence the results to some extent, it has been held that the real key to the action of remedies lies in their chemical affinities, that, for example, the change induced in the effects of methane (CH_4), by the substitution of a hydroxyl for a hydrogen atom is due rather to the chemical affinities of the hydroxyl than to the fact that the substance changes from a gas to a liquid. In recent years, however, the study of chemical structure has found a rival in the study of the physical characters; the properties of individual substances have begun to receive some attention as well as their relationships; and with this revival in interest the question has arisen as to the relative importance of the molecular constitution and of the physical characters of a substance in determining its pharmacologic action. In other words, a doubt has arisen whether the pharmacologic effects are due to the formation of chemical combinations in the tissues or to the presence of the drugs as uncombined foreign bodies in the cells and fluids. If chemical compounds are formed, then the molecular structure is the direct determining factor, though it may be modified by the physical characters, while, on the other hand, if no true chemical combinations are formed, the structure is of less immediate interest to the pharmacologist, and the physical characters ought to receive his chief attention, while the connection between the structure and the physical properties scarcely comes within his sphere of action.

A concrete example may illustrate the problem, and a simple one is offered by a comparison of the effects of methane (CH_4), which is practically inert, and of methyl alcohol (CH_3OH), which is a depressant to the central nervous system. It may be held that the OH of the alcohol permits of a combination being formed with protoplasm in the same way as with an acid, and that in the absence of OH in methane the latter is incapable of such a combination and therefore inert; or it may be suggested that the alcohol possesses some physical property, e. g., a lower volatility, which permits of its effecting some change in the cell without any chemical combination being formed, while methane is devoid of this physical property and inert. The question can be decided only by examining a large number of bodies and finding how far they support either view. For example, if it is found that no body homologous to methane is depressant and all the alcohols homologous with methyl alcohol resemble it in activity, there will be strong grounds for supposing that the hydroxyl in the methyl alcohol is the essential feature. On the other hand, if it is found that a large number of bodies possessing the physical characters of methyl alcohol, but without a hydroxyl group, are depressant, while those resembling methane in physical properties, but differing from it in structure are inert, the probability will be strong that the physical properties are the essential feature.

The time at my disposal is too short to allow of taking up all the work that has been done on this subject, and I think it will be more profitable to take up a few examples in which the action has been ascribed to one or the other factor.

One of the instances often quoted in support of the position that action is determined by structure is the large series of hypnotic bodies belonging to the aliphatic or open-chain series, including alcohol, ether, chloroform, chloral, paraldehyd, etc. Here is a series closely connected chemically and possessed of a characteristic action on the central nervous system. It is natural that it should be regarded as evidence in favor of the older view. It is true that the relationship proves only to be a very general one, and that whenever an attempt is made to apply the rule to individuals some exception is found to present itself. I need only cite the interesting experiments of Kionka[1] on the subject. He found that methane (CH_4), is devoid of narcotic action, while CH_3Cl has some effect. The presence of Cl appears to endow the molecule with activity, and further halogen substitution might be expected to augment this; on comparing CH_3Cl and $CHCl_3$, he found the latter four times more powerful. The inference would seem justified that CCl_4 would prove still more active; but as a matter of fact it is only half as depressant as $CHCl_3$. This result and numerous other similar divergences from what might have been expected from the older view have suggested that the depressant qualities of this series are not determined by their molecular structure, but by some physical factor which is present in a considerable proportion of the chemical group, but not in all of them. Professor Hans Meyer,[2] the originator of this view, ascribes the depressant action largely to their tendency to pass from watery solutions into fats and oils. Now, the cells in which these bodies tend to accumulate are peculiarly rich in lecithin and cholesterin (lipoids), and when a molecule of chloroform comes in contact with these cells it tends to leave the blood plasma and enter the lipoids. Its presence in the cells, however, deranges their delicate mechanism somewhat in the same way as a grain of sand may stop a watch, without any chemical combination having been formed. When chloroform is no longer inhaled and the blood becomes

1. Arch. internat. de Pharmacodyn, et de Ther., vii, 1900.
2. Arch. f. Exp. Path. u. Pharm., xlii, p. 109. Compare, also, Overton, Studien über die Narkose, Jena, Fischer, 1901.

free from it, the molecules in the nerve cells slowly return to the plasma, for though they are not so soluble in the latter as in the lipoids, they are not, of course, quite insoluble in it, and as those returning to the plasma are duly excreted in the lungs, more and more passes from the lipoids until these are finally capable of assuming their normal relation to the rest of the cell and consciousness returns.

In order to possess the hypnotic action associated with the methane series, a substance must thus be partially soluble in water or blood plasma and more soluble in the lipoids. In fact, a certain definite relation in its solubilities must exist, and in addition it must not act very powerfully on any other organ, otherwise its narcotic action will be obscured. This view is not unattended with difficulties, one of the most obvious of which is the fact that many substances share the physical properties of the narcotics without inducing their effects in the organism. Thus many substances of the benzol or aromatic series resemble the anesthetics in their relative solubility in water and lipoids, but fail to induce true narcosis. In some of them doubtless narcosis could be induced were it not for their affecting other organs. Meyer[3] has adduced one very telling argument in favor of his view in his investigation of the narcotic action of drugs at different temperatures and his comparisons of their relative solubility in water and oil at these temperatures. For example, he finds that the tendency of alcohol to pass from water to oil is almost twice as great at 30 C. as at 3 C., and in accord with this he found that it was about twice as depressant to tadpoles at 30 C. as at 3 C. On the other hand, less salicylamid passes into the oil from water at the higher temperature, and the narcotic action of this substance is correspondingly reduced. It seems quite impossible to account for this result on the older view of structural relationship, for this, of course, remains unchanged by the change in temperature.

In these cases the question is much complicated by the fact that the drugs have to be absorbed into the blood and distributed throughout the body and then taken up by the nerve cells; there is thus large opportunity for the interference of other factors than the relationship between the molecules and the nerve cells. A simpler process to follow is afforded by the local reactions, and one of these has been worked out in detail by Sternberg.[4] I refer to the characters of the bodies which have a sweet or bitter taste. Acid and alkaline tastes are, of course, not due to the similarity in structure of the acids on the one hand and of the alkalies on the other. but to the fact that acids in solution have a free hydrogen ion and alkalies a free hydroxyl ion; it is not similarity in molecular structure, then, but identity of ions that gives the identity of action here. Sternberg then confines his attention to sweet and bitter tasting substances and has obtained very striking results from his experiments, some of which may be mentioned here. The hydrocarbons are practically indifferent, but taste is conferred on them by the introduction of two or more OH groups, when the sense of sweetness follows. Thus glycol (CH_2OH-CH_2OH), glycerin ($CH_2OH.CHOH.CH_2OH$), erythritol ($CH_2OH(CHOH)_2CH_2OH$) and the succeeding members of the series are all sweet. The same result is attained if oxygen is added in the aldehydic form instead of in the form of hydroxyl. Thus biose (CH_2OH-CHO) is the first member of a sweet series, which may be followed up to dextrose if each C of the series has an OH attached to it. Even if one of the C atoms has no O attached to it the compound remains sweet, but if two C atoms are not oxygenated the taste is lost or changes to bitter. The oxygenated carbon atoms must, therefore, preponderate distinctly in bodies of this type which possess a sweet taste. That is, the sweetness is determined not by the presence of a definite group, but by the general character of the whole molecule; is there any physical character which is associated with such a molecule as Sternberg has defined as necessary to elicit the sensation of sweetness? Overton[5] has recently shown that the hydrocarbons are insoluble in water, but that as the HO groups increase in number they tend to give the molecule greater solubility in water and less in lipoids. Here, too, there must be a certain relative excess of the OH groups as compared with the non-oxygenated carbons; in fact, it seems possible to associate sweetness with a certain relative solubility in water and oils, although the subject requires much further investigation. The relationship between sweetness and this physical property is certainly suggestive.

A series of compounds which react very differently to living matter while practically indistinguishable by ordinary chemical reactions are the optical isomers. These have been studied of late years by Fischer,[6] who finds that the yeast cells and even the yeast ferments and emulsin can differentiate between the dextrorotary and levorotary isomeric sugars, while no ordinary chemical reagents select the one in preference to the other. Here again the property which determines the fate of these sugars does not seem to be associated with any one group in the molecule but to be determined by the character of the molecule as a whole, and this suggests that the selection of one isomer in preference to another by the ferments is due to the presence of some physical character, perhaps the rotation in one direction in the one, in the opposite in the other.[7] A similar selective action has been shown to occur in the higher animals as well as in the plants. I have recently been able to demonstrate a similar phenomenon in optically isomeric alkaloids. Thus levohyoscyamin proved to act about twelve times as strongly on the salivary glands as dextrohyoscyamin, although these two bodies can not be differentiated by ordinary chemical methods and would, therefore, be regarded as identical were it not for the different directions in which they rotate the ray of polarized light. It seems to me much more likely that the physical characteristic is the determining factor in this phenomenon than that the difference in configuration is the direct cause, although the physical factor undoubtedly rests on a structural difference ultimately. This can be determined, however, only by comparing the effects of other isomers on these organs.

Another set of reactions which appear to rest on a difference in physical properties rather than on chemical structure is offered by the behavior of the salts of the alkalies in the bowel. The class of saline cathartics can not be differentiated from the ordinary salts, such as the chlorids, iodids and nitrates, by any chemical feature possessed by the one group and not by the other, and it

3. Arch. f. Exp. Path. u. Pharm., xlvi, p. 338.

4. Arch. f. Phys., 1898, p. 451; Ztschr. f. Psych. u. Phys. der Sinnesorgan., 1899, xx, p. 385.

5. Pflüger's Arch., xcii, p. 115, 1902.

6. Ztschr. f. Physiol. Chem., xxvi, p. 61.

7. That the direction of rotation influences the reactions is shown by the fact that these isomers may be separated by the use of reagents which are themselves possessed of rotary powers.

seems necessary to resort to some physical differentiation, although it is not possible to define exactly this physical property at present. Thus the sulphates, phosphates, tartrates, and citrates of the alkalies are all possessed of cathartic properties, while the chlorids, bromids, iodids and nitrates are practically devoid of this action, and it might be supposed that purgation is connected in some way with the bivalent or trivalent anion. This rule fails, however, in several instances, notably in the case of the monovalent cathartic fluorids and in some members of the acetic acid series. On examining this series Wallace[8] found that formates, acetates, propionates, butyrates, valerates and caproates were rapidly absorbed; the next member, the enanthylates, passed more slowly from the bowel, and the eighth of the series, the caprylates, resembled the sulphates in their behavior. On taking up a parallel series of bivalent salts, he found that the oxalates were absorbed with much greater difficulty than the higher members, the malonates and succinates. The constitution of these bodies thus gives no key to their effects, and it seems probable that a clue must be sought in their physical characters.

The theory that pharmacologic action is correlated with the formation of chemical combinations has received a new lease of life through the remarkable series of discoveries which have been made in regard to immunity and which form the foundation of Ehrlich's theory. It is too early to attempt a discussion of the physical properties which may underlie these processes, but it is to be remarked that in the case of one hemolysin whose chemical and physical properties are known, the activity appears to be determined by the solubility co-efficient rather than by its power of chemical combination proper. I refer to the observations of Ransom[9] and Hedon,[10] which render it probable that the destruction of the red corpuscles by saponin is due to the solubility of the poison in the lipoids, and that the antihemolytic effect of blood serum in this case is the result of the presence of lipoids in the serum. Somewhat similar results have been obtained with some of the bacterial lysins,[11] and it seems possible that conditions of solubility rather than true chemical combination may prove to be the explanation of the vagaries of the intermediate body. It is a well-known fact that certain drugs act only in the presence of other bodies which are in themselves inert, but which tend to facilitate the solution of the active principles. For example, the active principles of the vegetable cathartics often prove less satisfactory when given in a pure form than when mixed with the inert bodies with which they are found in Nature.

Full justice to this question could only be done in a much more extended paper than I am able to lay before you to-day. For though the question has arisen in its present form only in the last few years, the facts bearing on it are so numerous that they will occupy much time and many minds in classifying them. I shall be satisfied if I suggest to you that the time-honored view that chemical structure determines pharmacologic effect is once more on its trial, and that many facts which can be brought into accord with it only with a certain effort can be explained more satisfactorily by supposing that structure is only the ultimate fact, and that the physical factors depending on structure are the immediate determinants of the action in the organism. On the other hand, there is no reason to doubt that many of the reactions of the living organism to chemical agents are the result of actual chemical combinations formed between them and the living substance.

8. Amer. Jour. of Phys., I, p. 411, 1898.
9. Deutsch. med. Woch., 1901, p. 194.
10. Arch. internal de Pharm. et de Ther., viii, p. 381.
11. Noguchi: Univ. of Penn. Med. Bull., November, 1902, p. 327.

THE PHARMACOLOGIC ACTION OF DRUGS;

ITS RELATION TO THEIR THERAPEUTIC INDICATIONS.*

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The relation between the pharmacologic action of drugs and their therapeutic indications can best be shown after we have made a brief sketch of their history. From the earliest times to the present the use of drugs has been mainly derived from past experience. A system in which their use is based on past experiences which have not been carefully observed or controlled, as has been the case up to within a very few years, is called empirical therapeutics. A system in which the use of drugs is deduced from past experiences, which have been carefully controlled by scientific methods, is called rational therapeutics.

In the old days of Babylon when there were no physicians, the sick were exposed on the public ways so that they might converse with passers-by who perchance might have had the same ailment and who possibly could suggest a remedy. A similar custom prevailed among the Egyptians, who recorded on tablets in the temples the names of the remedies which had been found useful in certain ailments in order that they might be administered to persons suffering from these ailments. It is said that Hippocrates drew much of his therapeutic knowledge from such tablets in the temples on the Island of Cos.

Although various metals and salts were known to the old Egyptians, they relied almost wholly on drugs of botanical origin. Hippocrates, who lived about 460 B. C., based his therapeutics on the theory that the human body is composed of four humors—black bile, yellow bile, blood and phlegm, and that various diseases arose from the disproportion between these elements. He said that vinegar is diuretic and that its beneficial effects are due to its properties of dissolving the excess of black bile and of converting it into phlegm. He treated most diseases by emesis and cartharsis and used as emetics black and white hellebore, and as purgatives these, in addition to mezereum, rhamnus, elaterium, colocynth, scammory and aloes. As diuretics he used baths, wine, garlic, onions, leeks, cucumbers, celery and other strong-smelling substances and cantharides, and as narcotics he used opium and atropa mandragora. Externally he used a few metallic salts.

For several hundred years Hippocrates' successors followed practically the same therapeutics. Occasionally one advised mild treatment with but little bleeding, while another brought into vogue energetic treatment with profuse bleeding and purging and the use of drugs in large doses.

During the first century of the christian era, Dioscorides wrote a book in which he described all substances having medicinal value and named the subject materia medica. He divided the book into three groups devoted,

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respectively, to drugs of animal, vegetable and mineral origin. This work is of importance, as it was used as the standard on this subject as late as the sixteenth century.

Galen, who lived in the second century, considered that the body was composed of fire, air, water and earth; that it possessed two of the four "proprieties," heat, cold, wet and dry, and that drugs act by removing the excess of one or more of these "proprieties." Like Dioscorides, he attributed to every drug two of these "proprieties" to a varying degree. Thus he considered pepper hot to the fourth degree and mezerum cold to the first degree. He considered astringent and salty substances hot, bitter substances dry, and acid substances cold. He treated all diseases, whether hot or cold, wet or dry, according to the axiom *contraria, contrariis curantur.*

From the fifth to the twelfth century the Arabs monopolized the field of medicine and science. They followed Galen and Aristotle closely, but introduced a few new drugs. Among these were camphor and the milder purgatives, such as manna, senna, rhubarb, tamarind and cassia. Muriate of mercury, which they used for scabies; orpiment, which they used as an injection in dysentery, and niter internally as a diuretic were a few of the metallic compounds used.

After the Arabians came the German, French and English alchemists, among whom were Roger Bacon, who prepared gun powder; Arnould de Villeneuve, who prepared alcohol and turpentine, and Basil Valentine, the German monk, who, in the fifteenth century, introduced antimony into medicine. Valentine was led to this step on account of an accidental observation which he made on swine which had eaten some antimony that he had thrown out of his laboratory window. The swine had been violently purged, but subsequently gained remarkably in weight.

The greatest of the alchemists was Paracelsus, who, in the sixteenth century, tried to utilize chemical knowlede in medicine and tried to overthrow the humor doctrines of Hippocrates and Galen. He believed that the living organism was composed of three elements: salt, mercury and sulphur; that its existence was maintained by chemical processes and fermentations, and that disease was due to a loss of balance between the three elements. His therapeutics was based on these assumptions and also on the theory that there was a specific for each disease. Syphilis, which in his time was raging through Europe, he combated very successfully with inunctions, fumigations and internal use of mercury. He used mercury with success in leprosy, dropsy and scabies. For this last-named disease he also used sulphur. As a purgative he used precipitated mercury. Unfortunately, he used drugs on account of their resemblance to certain organs—lemon, for example, for heart disease because it had roughly the shape of a heart, and blood root for blood disease because it was red. At the end of the sixteenth century, Van Helmont, who followed the principles of Paracelsus, completed the downfall of the Galenic humor doctrines and of the therapeutics based on it.

It was about this period that cinchona, which had been used for a long time by the Indians in the treatment of malaria, was imported from Peru and recommended for the treatment of intermittent fever because of the cure it had produced on the vice-queen of Peru. It was used in fevers of other varieties and, in fact, in almost all diseases. Lobelia and sarsaparilla, which were used by the Indians for syphilis, were also introduced at this period and were used by those who were opposed to mercury. Ipecacuanha was imported from Brazil, but was used mainly by charlatans until it was successfully administered for dysentery to the French Crown Prince. It then received universal application. In 1640, Parkinson, in his work on botany, described digitalis, and recommended its use internally for epilepsy and externally for gout. It was not until almost a hundred years later that Withering discovered its diuretic and cardiac action and recommended its use in dropsy where the heart is weak.

From the time of Hippocrates to the nineteenth century a number of new drugs were added to the materia medica. The drugs used in different diseases were often changed. New diseases were treated with both old and new drugs. Every now and then a specific was declared for a certain disease, but it was soon discarded for another. After many systems of therapeutics based on sophistry had passed through the history of the world, physicians used drugs more or less according to their own experiences. Practically all of them differed in their opinion concerning the value of a drug in certain diseases.

In ancient Greece and Rome after energetic treatments had been in vogue for a time a reaction took place, and only small doses and mild measures were used. In the same manner after a period of energetic treatment with heroic doses of drugs from the time of Paracelsus to the end of the eighteenth century a reaction took place in the establishment of homeopathy with its infinitesimal doses. After making very imperfect observations the founder of homeopathy, Hahnemann, came to the unwarranted conclusions that drugs had opposite actions in small and large doses; that they acquired mystical curative power by unlimited dilutions; that symptoms alone should be treated regardless of the cause of diseases, and that these symptoms should be treated by a drug which produced the same symptoms in large doses.

Unfortunately, this whole system was based on a fallacy. Drugs do not necessarily produce in small doses effects opposite to those which they produce in large doses and can not possess any action whatsoever in extreme dilution, and, further, so little was known accurately about drugs at that time that often very erroneous actions were attributed to them. Homeopathy had, however, a practical success, according to statistics. This is not astonishing in view of the fact that its followers employed the best possible hygienic measures, better even than those used in the other schools. By the too heroic administrations of drugs without proper knowledge of their actions the end of the patient was often hastened or at least recovery was often impeded, so it is quite easy to see the reason for the apparent success of homeopathy at that time, as it was a system which really consisted in administering no drug at all, and thus permitted Nature to cure when favored by good hygienic measures.

Pharmacology remained behind some of the other branches of medicine because the methods of observation used to study the action of drugs were entirely wrong. The ancients as well as the empiricists of the middle age could make no headway in pharmacology on account of their inaccurate methods of observations. When a person recovered from a disease after the use of a drug they attributed the recovery to the use of the drug without further attempts to find whether or not this was

really so or whether the use of the drug and the recovery were merely two sequent events.

The theory of obtaining knowledge by practical experimentation is certainly a good one, but observations must be made and conclusions drawn with the greatest caution. When a drug is administered to a patient and he recovers from the disease the question arises whether or not the recovery is due to the drug. Good clinicians in hospitals have tried salicylates in rheumatism in a series of cases and have come to the conclusion that they have marked action. Other equally good clinicians can not see any good effects whatever. This discrepancy probably comes from the fact that those reporting good results observed a series of cases the majority of which had the disease mildly while the others observed it in patients who had the disease severely. The errors of the clinical experimental method can to a certain extent be overcome when the action of the drug is observed on thousands of patients by a large number of physicians. The good effect of mercury in syphilis which has been attested by its action in a very large number of cases over a period of centuries is even now thrown into grave doubts by a number of syphilographers who claim equally good results without its use.

Another source of error in the study of drugs has been in the use of crude preparations. These contain very variable quantities of active substances, sometimes none at all when the active substances are easily decomposed. A crude preparation sometimes contains two substances which are antidotes for each other, so that its action may depend on the ratio of each substance present.

If the methods so far described for ascertaining the action of a drug and its value in disease are so unreliable, what can, then, be done to raise the efficacy of therapeutics? The development of chemistry and physiology has helped to solve this question. In large part through the influence of Bacon's teaching of the accurate method of experimentation and of accurate deduction, physics was developed and the mystic art of alchemy was gradually transformed into the exact science of chemistry. As soon as chemistry was placed on an accurate footing it took enormous strides. Soon numbers of new compounds were found and analyzed by new and accurate methods, so that at the beginning of the nineteenth century the body to which opium chiefly owed its activity was isolated. The isolation of morphin from opium by Seturner in 1816 was followed by the isolation of quinin from cinchona bark by Pelletier in 1820, the isolation of aconitin from aconitum by Brandes, 1821, the isolation of strychnin from nux vomica by Pelletier in 1818, and the isolation of atropin from belladonna by Brandes in 1823. By administering these pure active principles to animals and carefully studying their action when other influences were excluded the science of experimental pharmacology was developed. It was by this method that Morton by experiments on mice and on himself discovered the narcotic properties of ether and introduced it into surgical practice; that Schmiedeberg discovered and studied the active principle of poisonous mushrooms and taught us its antidote by which many lives have been saved. It was by this method that the chemist Pasteur discovered the cure for rabies and Roux the specific for diphtheria. Countless numbers of drugs could be enumerated whose beneficial influence in therapeutics was derived from a careful and accurate study of their pharmacologic action.

Knowing the exact action of a drug in health, how shall we apply this knowledge in disease? Pathologic physiology teaches us that disease is due either to the abnormal increase, decrease or arrest of a function from some cause or causes. Naturally, our first thought is that drugs should be directed when possible against the cause of a disease. Examples of this are the use of quinin in malaria and the use of antitoxin in diphtheria. This method is practical, however, in but a very limited number of diseases. We do not know the cause of many diseases, and but few drugs have been found to act on the cause of disease. Even if we could apply drugs to the cause of every disease, we could not have a perfect system of therapeutics, for decrease in certain functions may have been produced which would remain in spite of the removal of the cause of the disease. As the action of a drug consists only in increasing or decreasing functions, our main use of drugs consists in increasing functions which are abnormally decreased and decreasing functions which are abnormally increased.

But like all new sciences, during its infancy pharmacology received opposition. Some clinicians objected to therapeutics based on scientific experiments, and still advocated the old empirical system. Nowadays, however, there is not a good clinician who does not realize not only the usefulness but the indispensability of an accurate knowledge of the action of drugs in treating diseases. In former times physicians would have considered it sufficient to know that morphin relieves pain and produces sleep. We know now that we could not use this drug to best advantage and with safety without knowing something of its other properties which have been learned by scientific experiments. Thus in using morphin to relieve pain in pneumonia, asphyxiation might be hastened by a physician who does not know that morphin depresses the respiratory center. Again, a case of morphin poisoning can not be properly treated without a knowledge of the fact that morphin is excreted in very large part by the stomach for hours even after its subcutaneous administration. Knowing this fact, the stomach should be washed out repeatedly at stated intervals in order to remove the morphin which has been excreted before it is reabsorbed. Many other examples could be given to show that a superficial knowledge of drugs acquired from clinical experience alone is not only not productive of best results in therapeutics, but that it may even be dangerous.

Realizing this fact, the best clinicians the world over now try to base their therapeutics on experimental pharmacology. There are, unfortunately, still a few cases where we are obliged to use drugs empirically. When we do use them in this manner we should know all that could be learned through scientific research concerning the action of these drugs in order to avoid undesirable results.

The general anesthetics, ether and chloroform, are absorbed into the blood according to the laws of partial tension. The blood absorbs these from the air of the alveoli until it contains the same concentration. On the other hand, the anesthetic passes back from the blood into the air of the alveoli as soon as the concentration in the latter is decreased. The intensity of action of the anesthetics is not dependent on the total amount of anesthetics taken but on their concentration in the blood at a given time. Not very seldom death occurs during anesthesia from ignorance of these facts by administering a small amount of an anesthetic, but in a too concentrated form. None of the anesthetics, including ether, has ever been shown to have a direct stimulant action on the heart. On the contrary, they all depress

this organ when given in sufficient doses. This fact makes obvious the undesirability of the use of ether subcutaneously in collapse, and especially in collapse following ether or chloroform anesthesia.

Experiments show that chloral and its allies have marked depressant effect on the circulation and respiration, while urethane and paraldehyd do not have this marked depressant effect; in fact, urethane even stimulates respiration. This indicates to us the use of urethane and paraldehyd instead of chloral when the circulation and respiration are weak. Chloral, which is more powerful than the others, still has its usefulness in cases without weakness of respiration or circulation where a powerful hypnotic is required.

Ever since antiseptics were first discovered much labor has been spent in trying to find an antiseptic which would kill disease-producing organisms in the circulation. Benzosol, carbolic acid and formaldehyd have been recommended for pyemia and general tuberculosis. Experiments have failed to show any substance which can be placed in the blood in great enough concentration to kill bacteria there without injuring or killing the subject. The use of all such substances recommended up to the present time is certainly to be discouraged because not only do we not attain our end, but decrease the vitality of the patient with strong protoplasmic poisons and, therefore, hasten his death. There is one drug, however, which probably destroys an animal parasite in the blood, i. e., quinin in malaria. This is possible because of the great selectiveness which quinin has for the lower forms of protoplasm.

Apomorphin has been advised as a narcotic in the treatment of alcoholismus. It can easily be shown by experiments that apomorphin does not have any narcotic properties whatsoever except just before it produces death. Its beneficial action in cases of alcoholismus can be explained by its emetic action. By producing nausea it brings about a disgust for alcoholic beverages.

In former times a large number of drugs, including calomel and podophyllin, were used as cholagogues, i. e., to increase biliary secretion. Recent experiments have shown direct cholagogue effects to be produced by bile alone. The other so-called cholagogues are merely cathartics, and what good effects they produce can all be explained by their purgative action.

Digitalis is one of the most useful, but at the same time, most misused of drugs. Many physicians ignore the double action of digitalis on the heart, i. e., the action on the inhibitory apparatus and that on the heart muscle directly. The main indication for digitalis in medicine is based on its power of increasing the force of the heart contraction. The results desired in cardiac uncompensation, an increase in the force of the heart and disappearance of dropsy, may be obtained with little or no diminution in the rate of the heart beat. On the other hand, decrease in the rate may occur without a sufficient increase in the force of the heart. In determining the dose of digitalis in a given case of cardiac uncompensation we must not be guided by the effect on the rate of the pulse alone, but especially by the effect on the force of the pulse, by the disappearance of the edema and by the increase in diuresis. Since the action of digitalis is to increase the force of the heart, its administration in a fully compensated heart is not indicated because it can then only uselessly overwork the heart. Since the action of the various members of the digitalis group, such as strophanthus, squills and convallaria, is, in the main, the same as that of digitalis, these can be used interchangeably with the latter.

Strychnin slows the heart by stimulation of the vagus and constricts the peripheral vessels by action on the vasomotor centrally and peripherally, but it does not stimulate the motor ganglia nor the muscle of the heart. These facts suggest a different use for strychnin than for digitalis. Strychnin can be used only to lower the rate of the pulse in tachycardia or to raise blood pressure in collapse, but good results can not be expected when we wish to increase the power of contraction of the heart directly. It should be used with care in degenerated hearts and vessels for fear of straining the former and rupturing the latter by the increased blood pressure incident to the constriction of the peripheral vessels.

For ages patients have been advised to frequent springs and spas for the cure of almost every disease. It is only comparatively recently that we have understood the modus operandi of this treatment and the source of benefit when obtained. Mystical curative power was formerly attributed to baths. We know now that neither water nor salts are absorbed through the unbroken skin, therefore baths can only have local effect on the skin, which is an irritant one, capable of producing reflex stimulation of circulation, respiration and consequently of metabolism. The ingestion of large quantities of water with salts produces an increase in metabolism by the salt action after absorption. On account of this increase in metabolism patients with almost any chronic disease are temporarily benefited. Furthermore, on account of the fact that salts and alkalies have the power of dissolving mucus, mineral waters containing these can benefit patients with catarrhs of the stomach and intestines by dissolving the mucus which is adherent to the walls. It is obvious that the same good results might be obtained at home by baths and by drinking water to which various salts had been added if we had not in the spas the additional action of the psychic influence of change of scenery, pleasant surroundings and careful régime.

[The discussion on the papers of Drs. Cushny, Tyrode and Sollmann will follow the paper of Dr. Sollmann next week.]

NON-ABSORBENT GAUZE:

THE PROPER MATERIAL FOR TAMPONADES IN SURGICAL AND OBSTETRIC HEMORRHAGES; A PRELIMINARY PAPER.*

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CHICAGO.

In presenting the subject of non-absorbent gauze for your consideration I am not offering a new topic for discussion; non-absorbent gauze takes its origin contemporaneously with the antiseptic dressings of Lister. Lister's[1] earlier dressings were distinctly non-absorbent; the manner of their production secured it, for muslin was soaked in a heated mixture of paraffin 16 parts, resin 4 parts and carbolic acid crystal 1 part; while still warm the excess of the compound was wrung out. Lister[2]

* Read at the Fifty-fourth Annual Session of the American Medical Association, in the Section on Obstetrics and Diseases of Women, and approved for publication by the Executive Committee: Drs. A. Palmer Dudley, H. P. Newman and J. H. Carstens.

1. Sansom, A. E.: The Antiseptic System, Philadelphia, 1870.
2. Lister, J.: Edinburgh Med. Jour., p. 147, 1871.

shortly thereafter even suggested an 8 per cent. carbolic gauze made in the same manner. The paraffin counteracted the adhesiveness of the resin, and together they precluded a capillarity in gauzes thus treated. The faults of this carbolized gauze were early recognized and were its non-absorbence and its tendency to cake into a solid mass. In turn, Lister[2] experimented with corrosive sublimate and cyanid of mercury; the former, he found, combined with the discharges (pus and blood), being precipitated as an albumin-mercury chlorid, which did not have the antiseptic power of the bichlorid. By suspending the albumin-mercury chlorid in blood serum he secured a gauze which was "harsh mechanically and was not very absorbent (a serious defect)." To overcome these defects he tried a combination of the chlorids of ammonia and mercury (sal-alum-broth), the ammonia salt preventing the precipitation of the mercuric salt in the presence of albumin, but not inhibiting capillarity. The cyanid of mercury was too irritating for clinical use. Thereafter, surgical supply manufacturers used their skill in developing a true absorbent gauze.

My purpose in presenting these elementary facts is to show not Lister's endeavor to secure an ideal antiseptic gauze (his prime motive), but his endeavor to find an antiseptic gauze which was truly absorbent. His contemporaries, old and young, have kept his second purpose constantly in mind, and the original gauzes which were truly non-absorbent have been relegated to unmerited oblivion. In the early antiseptic days wound secretions were frequent, so an absorbent gauze was the desideratum of all surgeons; to-day, discharging wounds are seldom met, so the same necessity in all cases for a gauze with a marked capillarity does not exist as in former decades. To say the least, it does seem inconsistent for surgeons to require the same gauze for purposes of drainage as for packing in hemorrhage.

About a year ago R. H. M. Dawbarn of New York, in a personal communication, wrote me of the value of non-absorbent gauze in hemorrhages incident to surgical operations, and suggested that, in his opinion, it had as positive indications in obstetric uterovaginal tamponades as in surgical procedures; that for ten years he had repeatedly advised its use in various contributions on surgical subjects. The burden of my reply was that one of the physiologic functions of the puerperal uterus was to bleed for a variable period; therefore, if a gauze pack were introduced into the uterus it should be of such nature that it would not prohibit the normal drainage of that organ. Incited by his suggestion, I asked Johnson and Johnson to send me samples of plain non-absorbent gauze, with which I made some tests as to its action; the results of my experimentation, which will be epitomized later, have convinced me that when properly prepared its use is as clearly indicated in obstetrics as in surgical work. The one case in which I felt it was expedient to tampon since I began my investigation fully corroborated my tests; this case was one of severe hemorrhage following the manual removal of the placenta in a four months' criminal abortion.

The manufacture of non-absorbent gauze is practically a step short of the production of absorbent gauze; the raw cotton is thoroughly cleansed, then through devious treatments the individual fibers are gathered into threads, and the threads woven into the desired gauze. If the gauze is to be rendered absorbent it is boiled in a strong alkaline solution in order to remove the vegetable oil. The difference between the above non-absorbent gauze and commercial cheesecloth lies in the fact that cheesecloth is treated with a "sizing," such as albumin, preparations of zinc, clay, etc. The sizing increases the weight of the product, and also permits the utilizing of certain waste materials. In certain crude experiments as to the action of non-absorbent gauze I found these facts:

1. If the loose gauze be placed in a vessel containing a colored solution it floats; only that portion of the gauze brought into direct contact with the water is stained; no capillarity is observed. If the gauze be tightly rolled into a ball the same result occurs.

2. If the gauze be slightly dampened capillarity manifests itself after a protracted period; in one instance the solution passed over the rim of the vessel and down the dependent portion at the end of six hours. In a like test with absorbent gauze the water dropped in about a half hour.

3. If the gauze be thoroughly saturated with water and then subjected to the test, capillarity manifested itself shortly after a like treatment of absorbent gauze; when capillarity was thoroughly established the drops from the non-absorbent gauze fell more rapidly than from the other; the difference in capillarity may be ascribed, perhaps, to altered physical conditions—the size of the thread, more probably the size of the mesh, and the solidity of the wicking used, or if the mesh be filled with droplets of water "osmosis," if you please, may be the determining factor in producing a siphonage.

As a result of my tests I would hazard the statement that moist non-absorbent gauze has one-sixth to one-tenth the capillarity for water of the plain absorbent gauze. Some may raise the question, is a test with water applicable to the physical properties of blood? I maintain these tests are only illustrative; but I am confident that the two types of gauzes have relatively the same capillarity when considered with blood. Finding that the unprepared gauze under certain circumstances of moisture, or other physical conditions, may have a capillarity, has suggested to me that for certain restricted purposes in pure surgical work a gauze should be prepared which has no absorbency whatever; with this object in view I have considered the advisability of treating gauze with some substance which would attain this object. To be effective this substance should promote coagulation, or at least not delay it. As Lister's gauze was non-absorbent, from the method used in its preparation, I first thought of paraffin, so had some made. It produces a fine-looking gauze, soft in texture, but with difficulty takes up water or antiseptics within its substance. The chief objection to its use is that paraffin delays coagulation, so it is not an ideal substance for the purpose. As Pagenstecher[3] has had signal success with celluloid yarn for suture material, I turned to it as the next possibility. Perhaps the same objection obtains as against paraffin. These two substances do not agglutinate the fibers of the thread, as is evidenced by the samples before you; it is known that a rough substance, especially one with fine projecting filaments, accelerates coagulation, so what is gained by non-absorbency only may be lost by these two substances delaying clottage, which may be a serious defect. By incorporating an approved antiseptic in the fluid paraffin or celluloid, gauzes thus prepared may be made thoroughly bactericidal. O. Schaeffer[4] suggests, and uses, for postpartum uterovaginal tamponades a gauze impregnated with gutta percha; his paper was noted by me at the time of its publication, but his recommendation did not

3. Pagenstecher, J.: Phila. Med. Jour., p. 351, Feb. 10, 1900.
4. Schaeffer, O.: Münch. med. Woch., p. 945, Oct. 6, 1896.

make a particular impression on me; his plan of putting an absorbent strip of gauze against the bleeding site (e. g., the placental site), and then packing about this strip the gutta-percha gauze, did not seem feasible to me. Non-absorbent gauze treated with gelatin in many respects would be an ideal solution of the difficulty; gelatin, whether used by hypodermoclysis, by mouth, or by rectum, promotes coagulation; when applied directly to the bleeding surface it is more certainly effective. I have used gelatin absorbent gauze in my tamponades several times with positive results. Gelatin gauze can hardly be a marketable product on account of its great liability to germ contamination, as it is a good culture medium; again, the frequent German reports of tetanus following the hypodermatic use of gelatin demand that it be sterilized with especial care. It has been recently stated that the hemostatic property of gelatin is dependent largely, if not exclusively, on the calcium chlorid contained in it. If calcium chlorid is the hemostatic principle of gelatin it would be far more safe and rational to impregnate gauze with a weak solution of the salt, one to 200 or 500. There is one adverse factor in regard to calcium chlorid gauze for uterine tamponades, namely, the gauze must be both aseptic and antiseptic if it is to be left in place twenty-four to thirty-six hours; it may be a difficult proposition to get a good antiseptic which will not decompose in the presence of the calcium. In parenthesis I might state that the usual gauzes impregnated with antiseptics have not the capillarity of plain gauze. Hall[5] maintains this; Vignard[6] claims iodoform gauze has only one-fifth the absorbency of plain gauze; the users of medicated gauze do not get the full drainage they anticipate.

INDICATIONS FOR THE USE OF NON-ABSORBENT GAUZE.

When drainage is indicated in the abdominal, pelvic, thoracic, pus cavities, etc., there is no room for doubt that the gauze must be absorbent to the greatest degree. in stating this I make no asseveration as to the merits of gauze drains. The routine dressing for clean, dry wounds and surfaces, I am equally convinced, should be covered with the usual hygroscopic materials. *Per contra,* in cases of hemorrhage where it is impossible to catch the bleeding vessels with forceps or inexpedient at the moment to ligate, and in parenchymatous oozing, a gauze should be applied which possesses a minimum degree of capillarity, or one in which absorbency is entirely absent. A few illustrative instances will be sufficient; the rapid extirpation of the carcinomatous breast with the axillary glands with one sweep of the knife, as practiced by N. Senn; no clamps are applied until the breast is disposed of; here firm compression, not capillarity, is required. Non-absorbent gauze will find a ready use in that bloody operation of removing the upper maxillary bone, etc. In these cases, as well as in alarming hemorrhage from ruptured vessels in the course of difficult laparotomies, with concomitant shock, the blood absorbed by the usual gauze may be of such amount as to seriously jeopardize the life of the patient; by packing with a non-absorbent gauze some ounces of blood may be saved to the patient which otherwise would be lost, and the danger point will be more safely tided over.

In the meager presentation of the surgical indications of non-absorbent gauze my only purpose is to introduce the subject to surgeons; it is for them to place the indications for the use of the several forms; for mere compression I believe an impervious, or at least dry, gauze is to be elected; where compression and a modicum of drainage is demanded untreated non-absorbent gauze will be preferable.

OBSTETRIC INDICATIONS.

Antepartum.—The purpose of vaginal tamponades antepartum are fourfold: 1. To promote contractions. 2. To distend the vaginal vault, raise the uterus, and thus pull on the uterine arteries, acting as a tourniquet (Tweedy[7]). 3. To produce a compress against the bleeding surface (placenta previa). 4. To retain the effused blood so clotting may occur and thrombosis take place. The first three purposes will be as certainly produced by absorbent as non-absorbent gauze; their action is purely mechanical. As to the fourth, some may question which gauze is more effective; but either will act only as a mechanical stimulant to coagulation. I imagine that those who will defend the former will maintain that as soon as the serum is extruded from the clot it is absorbed by the gauze, thereby promoting further clotting. Coagulation is not an instantaneous process, it takes time; during the interval which must elapse absorbent gauze becomes saturated with blood, it has literally sapped the blood from the vessels; *per contra,* if non-absorbent gauze be used an efficient dam is pressed against the source of the bleeding, so only a minimum amount of blood escapes. Therefore, I would suggest that non-absorbent gauze should be used as the routine tampon material in all antepartum work where plugging is indicated, as in abortions, hydatidiform mole, placenta previa, etc.

Postpartum.—The virtues which we attribute to the antepartum vaginal tampon apply with equal force to the postpartum uterovaginal pack; I am positive that the most certain means of arresting postpartum hemorrhage lie in the timely use of thorough tamponades. I do not hold that tampons come into direct concurrence with massage through the abdomen, intrauterine compression, Breisky's bimanual compression, ergot, hot douche, and the other more or less certain means of securing contraction and coagulation, but I do maintain that all these should be held as tentative measures; when their uncertainty is manifested temporizing measures should be discarded and the gauze applied. To be sure, in very exceptional cases it will fail, but failure would be more glaring consequent to other methods of arresting bleeding. Chrobak[8] states that the tampon failed three times in twenty-seven cases of atony after delivery of the placenta.

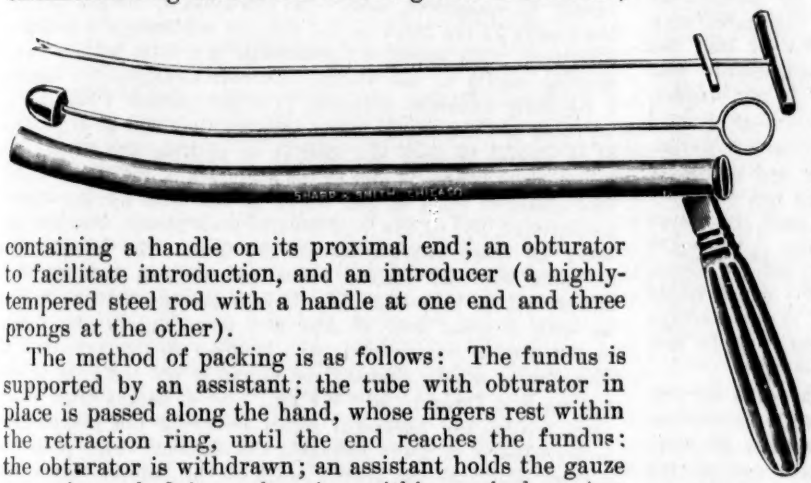
I would place the indications for the uterovaginal tamponade under these headings: 1. Atony. 2. Lacerations of the parturient canal (especially of the cervix) under such circumstances which preclude the delay incident to suturing the tears; in incomplete rupture of the uterus, and exceptionally in complete rupture. 3. Hemophilia (blood dyscrasia). 4. As a prophylactic against hemorrhage, as after severe operative deliveries; rapid delivery may be the cause of atony postpartum; the introduction of the tampon secures firm contractions, and prevents hemorrhage; the quicker the woman is returned to bed the better it is for her; this is especially the case in placenta previa. 5. As a prophylactic against infection; midwife cases, examinations by questionable hands, especially futile attempts at operative delivery; after manual delivery of the adherent or retained placenta.

5. Hall: Boston Med. and Surg. Jour., p. 518, vol. 137, 1897.
6. Vignard: Bulletin Med., Paris, No. 21, 1902.
7. Tweedy: British Med. Jour., p. 1445, vol. I, 1898.
8. Chrobak: Wiener klin. Woch., Sept. 18, 1902.

In using the tampon as a prophylactic against infection I most certainly would not recommend a non absorbent gauze; here a gauze with good drainage power must be used; it should be impregnated with a powerful antiseptic which at the same time is innocuous to the human organism; thus far I have found no chemical which so fully meets the indication as chinosol. In all the other conditions warranting the tampon I would use the non-absorbent gauze medicated with chinosol. It is frankly debatable if it is proper to employ a gauze charged with a substance which prohibits all capillarity, of a nature as I have already described. In blood dyscrasias I am positive gelatin gauze holds first rank; perhaps calcium chlorid in combination with a stable antiseptic may vie with it in efficacy.

TECHNIC OF INTRODUCTION.

I shall not dwell on the methods of Dührssen, Schauta and others who vary the method of packing by using the hand alone, the hand and dressing forceps, or the specula, vulsella and dressing forceps; they have been repeatedly described, and in proper surroundings merit their use. I would like to call attention again to the packer I exhibited to the Chicago Gynecological Society,[9] November, 1901. This instrument is a modification of some now in use, altered to meet the conditions of the parturient uterus. It consists of three parts (see illustration): a properly curved tube twenty-eight centimeters long with a caliber of eighteen millimeters,



containing a handle on its proximal end; an obturator to facilitate introduction, and an introducer (a highly-tempered steel rod with a handle at one end and three prongs at the other).

The method of packing is as follows: The fundus is supported by an assistant; the tube with obturator in place is passed along the hand, whose fingers rest within the retraction ring, until the end reaches the fundus: the obturator is withdrawn; an assistant holds the gauze properly packed in a glass jar, within an inch or two of the proximal opening of the tube, an end is picked up with a forceps and passed within the tube; then the introducer pushes it through the tube; finally, with quick back and forward movements, the introducer catches the gauze near the distal end of the carrier and carries it into the uterus, and eventually into the vagina. As the gauze is pushed home, the hand in the vagina holding the tube is gently swayed from side to side, thus completely filling the parturient canal. As the gauze escapes from the tube it (the tube) is gently withdrawn—in fact, is pushed back by the escaping gauze. Since introducing this instrument I have packed the genital tract eighteen times for the various indications already briefly enumerated with uniform success, and am convinced it is the safest method for placing gauze within the uterus: 1. It is the only aseptic method, for the gauze does not come in contact with living tissues until it is in its bed. I do not except the method where specula, vulsella and dressing forceps are used. 2. It requires only one introduction of an instrument; the dressing forceps must enter the parturient tract at least thirty, if not sixty, times. 3. Further abrasion of the already scarified mucous membrane is absolutely obviated; rough gauze passing over the membrane will make additional denudations, and may dislodge clots which are forming. 4. One assistant only is necessary, although two are preferable; he may support the fundus and hold the jar of gauze at the proper place; by other methods two assistants are wellnigh indispensable. The only disadvantage I can imagine is that in a marked atony of the uterus the packing may not, perhaps, be as firmly applied, which I feel is a valid objection.

Finally, whatever method of introduction is used it is indispensable to have a properly prepared gauze, one which is aseptic and antiseptic, and is so placed in the container that it feeds out without any handling. The gauze should be at least ten yards long, one-half yard wide, folded into a strip about two inches broad with the free edge perfectly covered; this strip must be felted in the jar; under no circumstances must it be rolled up, then placed in the receptacle. At the present time no gauze suitable for obstetric tamponades is on the market.

387 North State Street.

9. Holmes, R. W.: Amer. Jour. of Obst., p. 245, February, 1902.

DISCUSSION.

Dr. Chas. S. Bacon, Chicago—The assumption that absorbent gauze is drainage is not in accord with facts. It is well known that a gauze packing is a packing and not a drain. Wicking should be used when a drain is wanted. The impregnation of gauze with hemostatic substances is much more important than the impregnation of gauze with something that makes it non-absorbent. The idea of mechanical compression of bleeding vessels of the uterus in postpartum hemorrhage is, I believe, a mistake. We can never pack the uterus so as to compress the bleeding vessels unless we have the contracting action of the uterus. Stimulation of the uterus to contraction is essential in postpartum hemorrhage. Whether that is done by gauze or by some other substance is immaterial. In some cases it is desirable to hasten the coagulability of the blood. That is particularly true in cases of dyscrasia where there is a slow coagulation of the blood; these are the most serious cases, and are not so extremely rare. It is important to have some hemostatic or coagulating action in these cases, and that is secured by the use of gelatin or other substance. Investigations in that line are desirable. There is an indication for gauze packing in postpartum hemorrhage, such as lacerations that are not controlled by sutures. These are lacerations in the lower uterine segment that for some reason can not well be repaired by suture. Here we must rely on the contraction of the upper segment of the uterus to furnish resistance to the tampon. There we get a certain amount of mechanic compression, but it is not the compression that would be obtained in a surgical cavity after all, and even in these cases gauze impregnated with some coagulating substance would be useful.

Dr. C. O. Thienhaus, Milwaukee—In general surgery also we sometimes encounter situations in which gauze capable of promptly arresting capillary hemorrhage would be of greatest value. About two years ago a man of about 80 years of age was suffering from a chronic catarrh of the antrum. After opening the supermaxillary cavity, I endeavored to remove a few polypus growths on the middle turbinate. A severe hemorrhage followed which I was unable to control by gauze packing. Adrenalin solution stopped the hemorrhage promptly. Experiments ought to be made with gauze impregnated with adrenalin or with gelatin. Naturally, the drug used must not show bad effects on the wound or on the welfare of the patient.

DR. V. M. SHOWALTER, Point Clear, Ala.—Tamponage in postpartum hemorrhage is impractical and unscientific, except when the circular artery is involved in the laceration. One never has time to get the packing outfit ready. Immediate aid must be rendered. I have done this work for many years. A number of my patients suffer from pernicious anemia, which in some cases is secondary to uncinariasis, and with the seventh or eighth deliveries I usually expect a postpartum hemorrhage, and I am seldom disappointed. I never yet had a case where I had time to use tamponade or anything else except my hand. It is fashionable in my section to have very large families.

DR. HUGO EHRENFEST, St. Louis—Tamponade is one of the most effective and important therapeutic measures at our command in dealing with obstetric hemorrhages. In practice we meet two difficulties: (1) We can not get gauze fit for tamponade. (It would be a great advantage if such a gauze should be marketed.) (2) It is a difficult procedure in packing the uterus to not carry infection from the vulva into the uterus. Special specula have been devised to protect the gauze which is introduced into the uterus, but they are very large and bulky. The instrument presented by Dr. Holmes is a valuable one. It will enable us to pack the uterus under aseptic conditions, and it is not so bulky that it can not be carried in the ordinary bag.

DR. WM. P. MANTON, Detroit—Postpartum hemorrhage should be divided into two classes. In the first a large amount of blood is poured out in so short a time that the obstetrician has not time in which to do anything. In those cases there is sometimes a paralysis of the uterine muscular fibers, and the patient succumbs before the obstetrician can render assistance. In the ordinary cases of postpartum bleeding the hemorrhage is not so severe, but the obstetrician must act promptly and pack the uterus, and so stop the hemorrhage. The irritation of the gauze undoubtedly also acts in promoting contractions of the uterus. In my opinion, the absorbent gauze answers every purpose, although I have not had an opportunity to use the non-absorbent material. The blood fills the interstices of the gauze and promotes coagulation. This the non-absorbent gauze can not do. Any obstetrician of skill can, in the ordinary case, pack the uterus so tightly that not a drop of blood will escape. I think the drainage of serum is an advantage, and I can not see where, in obstetric practice at least, the non-absorbent gauze would be better than the absorbent. When we want to get drainage through the gauze we must use the absorbent, and in this respect the absorbent gauze is superior to the other.

DR. SETH C. GORDON, Portland, Me.—Prevention is far better than cure, and I believe that nine-tenths of all postpartum hemorrhages can be prevented if the obstetricians do what they should. When I was studying medicine one of the best teachers in any branch was Prof. E. R. Peaslee of New York. He said never to deliver a woman without having some one press the uterus down as the child was being born. After the child is delivered this pressure on the uterus should be continued until the obstetrician is ready to take charge of the placenta. If one follows this teaching one will have less postpartum hemorrhage; in fact, I believe it will be rare.

DR. H. J. STACEY, Leavenworth, Kas.—Absorbent gauze pushed in the uterus does not act as a drain. The only effect is to assist coagulation. Does not packing with a non-absorbent gauze act more like a plug and allow a condition very similar to accidental hemorrhage to occur? The only procedure in packing that is of any value is the manual method, as there is no time in which to get all the various instruments ready, although in a slow hemorrhage they might be used to advantage. In obstetric work I think Dr. Holmes has a very doubtful field for his gauze and packer.

DR. H. E. PEARSE, Kansas City, Mo.—We sometimes find it absolutely necessary during an abdominal surgical operation to control hemorrhage by packing, although it is not perfect surgery. It is always a confession of defeat. The control of hemorrhage is not the only factor to be considered; there is the question of drainage, the hemostasis being perfect; and of infection. It is essential to use nothing but absolutely sterile gauze. I long ago discarded medicated gauze where plain sterile gauze would answer the purpose, as it usually does. I control simple venous oozing with plain gauze, although this will not control arterial hemorrhage. Iodoform gauze is better for that purpose, although alum water is also useful. When we have to deal with an infected surface it is advisable to use iodoform gauze. When gauze is needed only to control hemorrhage I believe I will try Dr. Holmes' non-absorbable gauze. In that limited field of non-infected surfaces with a bleeding that is arterial, it would be a very desirable procedure.

DR. ROSA WISS, Meridian, Miss.—By having a pair of sterile rubber gloves in my bag I once saved a woman's life. I was called suddenly to deliver her of her twelfth child and found her all alone. Spontaneous delivery was very rapid, and immediately following a stream of blood as large as my wrist poured from her uterus. I knew that if that flow continued for a few minutes the patient would die. I remembered that I had my gloves, so I put them on and introduced my hand into the uterus, keeping the other on the abdomen to make pressure. I kept them in that position until I succeeded in stopping the hemorrhage. I sat there in that position for two hours, but the woman came through all right, and is alive to-day.

DR. EFFA V. DAVIS, Chicago—I desire to speak in favor of the instrument shown to-day. We all draw our conclusions largely from our own experience, and in twelve years of active obstetric practice I have seen very few postpartum hemorrhages, consequently I have a great deal of confidence in prophylaxis. The packing of gauze is such a very difficult procedure that other things which are more easily done should be considered first. In prophylaxis, simply holding the uterus at the birth of the child is not always a sufficient safeguard. One source of hemorrhage is a long, tedious birth, causing inertia of the uterus. Chronic endometritis, leaving a partially adherent placenta, is often another element. If we think of these things before delivery they will be of service. It is unwise to keep the subject of packing the uterus too prominently before us and to the exclusion of all other things. The obstetric work of the world is not done by the expert obstetrician, but by the busy general practitioner, who can not carry all these instruments all the time. The introduction of gauze over an unclean vulva and unclean bedding is a matter not to be overlooked. It is a procedure to be looked on with a great deal of fear and trembling in the hands of the general practitioner, who is often so illy prepared to do obstetric work. Packing the uterus is not the only thing, nor the first thing to do. We still hear of deaths from puerperal sepsis, and puerperal sepsis following the postpartum hemorrhage is in many instances the element which produces a fatal result, as the anemic state of the patient leaves her in the poorest possible condition to resist infection.

DR. GRANVILLE RYAN, Des Moines, Iowa—Dr. Davis' point is too often overlooked, i. e., the matter of packing the uterus without having everything sterile. I have had a number of very severe cases of postpartum hemorrhage, but I have never packed a uterus, nor have I lost a case, nor had an infection. I always have normal salt solution and plenty of sterile water. I douche with the normal salt solution just as quickly and as hot as it can be applied. In addition I give strychnin and stypticin hypodermically and perform hypodermoclysis if necessary. I am very careful to antisepticize my hands and the vulva, of course. My experience has been that we too often forget or neglect to look into the history of the case to ascertain whether or not the patient is a bleeder. It is very necessary that that should be done. And, above everything else, we owe it to our patients to have a complete armamentarium and be ready for any emergency.

DR. V. M. SHOWALTER, Point Clear, Ala.—The advocation of tamponade is unscientific in conception and impractical in application. I may not possess the obstetric skill of others, but I can recall, from memory, fifteen patients with postpartum hemorrhage in the last fifteen years, and, thanks to the painstaking instruction I received from my old preceptor,

Dr. Owen of Mobile, I have never lost a case. In the cases where the blood flows like water from a pump you have not time to do anything except to put one hand into the uterus and place the other on the abdomen to excite contraction of the uterus. I always have an abundance of sterile water and salt solution prepared. I have never yet had the privilege of testing the value of prophylaxis because, as a rule, I do not see my patient until within thirty minutes of the time when the child is born. I do not believe that any man can on purely scientific grounds prove that tamponade is practical.

DR. R. W. HOLMES—The discussion has been largely on the treatment of postpartum hemorrhage. No one feels more than I do the value of prophylaxis in this condition, but every text-book of to-day makes positive, sweeping statements that are far from being true. They say that prophylaxis can eradicate postpartum hemorrhage entirely. That is impossible. We all should have a standard as to what is a normal blood loss. A woman who loses six ounces or more of blood should be considered to have postpartum hemorrhage, which includes 10 per cent. of women at least; but, fortunately, it is only 1 in 200 in which the hemorrhage is of any moment; and only 1 dies in 1,000 or 2,000. But the profession must learn that postpartum hemorrhage is one of the most frequent complications of labor, far more frequent than the complications of the first and second stage. The Credé treatment is recommended after twenty minutes, but in 60 to 75 per cent. of the cases a Credé can not be done after twenty minutes because the placenta is already out of the uterus. Credé treatment means the forcible separation and expulsion of the placenta from the upper uterine segment. As to adrenalin, the manufacturers would not recommend its use in the uterus; one death is reported following its use; its internal administration does not concern us here. Saenger recommended that ferrotannin be used; it is both styptic and, to a small degree only, an escharotic. Glutol is another, and there are many more substances which promote clotting. Any one who has put a tampon in the postpartum uterus knows that there is a capillarity to the gauze. There is not entire stoppage of blood between the tampon and the mucous membrane, because after three or four hours the napkin becomes stained with serum, and when the tampon is removed it is usually saturated with blood. I distinctly said in my paper that I did not believe in putting in absolutely non-absorbent gauze. I said it should be moist, which produces a minimum amount of capillarity. The uterus contracts and forces the blood into the meshes of the gauze, and when capillarity is once started it goes on just the same as in the case of absorbent gauze, only more slowly. The subject of drainage is entirely without the scope of the paper. The day has gone by when the physician can go to an obstetric case not prepared for the work. He must have a complete armamentarium, and I am thoroughly in accord with King of Washington, who said at least fifteen years ago that any man who went to an obstetric case and did not have an armamentarium to meet the ordinary emergencies of labor should be held criminally liable. The day of the man midwife is past. There are too many of them; tney should be wiped out. I think the time will come when the man who goes to an obstetric case with his forceps wrapped in the morning paper will be held incompetent to practice his profession. Any man able to do obstetric work should be able to tampon a uterus. The instrument I have presented offers the only means of tamponing the uterus quickly, and at the same time eliminates all possible sources of contamination from the gauze sliding over the vulva and vaginal mucous membrane. The last speaker voices the opinion of those who decried the tampon when Dührssen first introduced it; its adoption by practically all scientific obstetricians is sufficient attestation of its inestimable value.

Some Uses of Olive Oil.—Beside having value as a mild laxative and tonic for babies, olive oil may be found of service in dysentery, in severe diarrhea and in chronic catarrhal gastritis.—*Texas Medical News.*

DESTRUCTIVE STERILIZATION BY CATAPHORESIS OF CANCER OF THE UTERINE CERVIX.*

G. BETTON MASSEY, M.D.
PHILADELPHIA.

The somber results of the knife and curette in the treatment of cancer of the cervix uteri are nowhere shown more distinctly than in that beautiful and monumental work of Cullen,[1] in which science has been enriched by the careful study of 141 cases operated on by master hands; seventy-three by hysterectomy and sixty-eight by curettement. Of the total number but fifteen, or about 10 per cent., were still living when the book went to press. An even more gloomy result was reported in a discussion in this Section at the Saratoga Session,[2] where one operator was quoted as saying that he had operated on 482 cases of cancer of the cervix, of which but two were living.

From experimental studies of the autoinfectivity of cancer, notably summarized in a chapter of the work mentioned, it is evident that this small percentage of cures in operable cases may be due in part to a reimplantation of the growth in the cut edges. This has been partially provided against by the Byrne method of cauterization by the galvanocaustic knife, and more recently by the electric cooking process of Skeene, revived by Downs. While the latter process is somewhat clumsy, and difficult of application through the vagina, owing to the large instruments and great heat required, it is evident that both methods are distinct advances in the treatment of cancer of the cervix by a probable elimination of operative infection.

A far more thorough sterilization is, however, possible by the use of the electrochemical method advocated by the writer for some years, for by this method no preliminary opening of the lymph and blood channels, with possible instantaneous admission of cancer cells, is required, the growth being destroyed and sterilized *in situ*, and the sterilization then carried to any desired depth and in any desired direction by small, easily-handled instruments, with complete protection of the external parts from accidentally straying force, and without appreciable heat production.

A powerful electric current is employed in this method for the development, within the substance of the growth, of nascent oxychlorids of mercury and zinc, from a union of electrolytically freed oxygen and chlorin with the mercury and zinc of an amalgamated electrode. These nascent salts thus produced during application are radiated in all directions by the continued flow of the current, devitalizing the protoplasm of the neighboring cells, particularly the better conducting lowly vitalized malignant cells, and the outflow may be governed and directed by the operator until both the center and the periphery of the growth are devitalized and sterilized, the destroyed tissues assuming a whitish-gray aspect.

The time required for the total destruction of an average cancer of the cervix varies from a half hour to two hours, with a current of 500 to 600 milliamperes, the patient being under a general anesthetic, as for a major operation. In certain early stages of malignant disease of the cervix the same results may be accom-

* Read at the Fifty-fourth Annual Session of the American Medical Association, in the Section on Obstetrics and Diseases of Women, and approved for publication by the Executive Committee: Drs. A. Palmer Dudley, H. P. Newman and J. H. Carstens.

1. Cancer of the Uterus, T. S. Cullen, D. Appleton & Co., New York, 1900.

2. THE JOURNAL A. M. A., July 26, 1902.

plished by several prolonged applications of 150 to 200 milliamperes, which may be borne without an anesthetic.

The immediate results of a thorough devitalization and sterilization of such a growth are the arrest of pain, hemorrhage and odor; and the slough produced is separated by the process of Nature in from ten days to three weeks. The bloodless destruction of the apparent portions of the growth do not, however, exhaust the full value of this application, for beyond the limit of absolutely destructive action there will be produced by a prolonged application a radiating zone of partial impregnation with the mercuric salt of sufficient strength to devitalize malignant cells, while the normal tissue elements are only irritated. It is this zone of sterilization that makes the value of this method absolutely unique, though the readiness with which the immediate area of necrosis is produced and directed at will is alone sufficient to attract the attention of the surgeon.

DETAILS OF THE OPERATION.

It is probable that the current required in a major application of mercuric cataphoresis in a case of cancer of the cervix may be obtained from the 110-volt Edison mains, but I have preferred to use a somewhat greater voltage, about 160 volts, obtained from specially built carbon-zinc-acid batteries of a total of about eighty cells. Two thirty-cell and one twenty-cell battery are connected in series to obtain this number. The batteries must be in the best order, freshly amalgamated, and with fresh fluid. The only other pieces of apparatus required are a good meter and controller adapted for the control and measurement of the large current used.

The negative dispersing pad on which the patient lies is placed on the operating table, which is preferably of wood to prevent straying of the current, covered with some material to make it slightly yielding to the shape of the patient's back. This pad is composed, from below upward, of a rubber sheet, on which is placed a lead plate as large as the patient's back, connected with the negative pole of the battery, and over the lead plate a very thick absorbent pad composed of nine or ten layers of heavy cotton material thoroughly saturated with warm water. Care must be taken that the lead plate is entirely covered so that the patient, who lies on it, does not come in contact with the metal.

On the pad the patient is placed in the dorsal position with the legs supported by a leg holder. After the patient is in position a deflated Kelly pad is slipped beneath the buttocks to prevent too short a circuit for the return current in this situation, and to provide drainage for the waste water used in keeping the vagina cool.

On a table at the side of the operator is placed a tray containing several appropriately shaped zinc electrodes with their tips coated with mercury, a glass cup containing dilute sulphuric acid to facilitate the renewal of the mercury on the electrodes, and another with several ounces of liquid mercury. The progress of the work is best observed by a miniature lamp and a Fergusson speculum when the electrode is removed from time to time, and these articles should, therefore, be at hand.

The best result in the cataphoric destruction and sterilization of cervical cancer is obtained from the mixed electrolytic salts of zinc and mercury, rather than from the pure mercuric salts from gold-mercury electrodes. This is partly due to the difficulty in controlling a liquid electrode surface in this situation. The accompanying illustration shows the shape of the zinc-mercury instrument that I have found to be most convenient for the purpose. You will observe that it is heavily coated with non-conducting materials fused on it except at the active surface.

The apparatus having been connected up and tested, the patient is etherized and placed on the table, with careful adjustment of the pad, and the operation begun by inserting the point of the electrode into the growth and turning the current on gradually until the desired strength has been attained. The operator's finger should be kept near the seat of action, and when an uncomfortable rise of heat is observed the rubber tip of a fountain syringe should be inserted within the vagina alongside the finger and a little cold water allowed to flow. This effectually keeps down the heat otherwise developed when so great a current is concentrated at such a small point as a single electrode. At the end of fifteen or twenty minutes the current should be turned off, the site of action examined, and a freshly amalgamated electrode placed in such new position as desired. At the end of a time varying from a half hour to two hours the whole of the growth will be destroyed and a moderate region beyond sterilized. The completeness of the destructive action is apparent on visual examination, but much more thoroughly attested by the changed conditions indicated to the examining finger, for it is characteristic of a cancerous growth under this process to become progressively soft during the flow of the chemical, and the test of a complete

softening of the indurated areas is the signal for the termination of the operation.

The after-treatment of the patient is merely expectant, but little pain being felt and this only during the first twelve hours.

The writer does not present this method to the profession as a cure-all by any means, but he does believe that it is the most effectual method for the treatment of the early stages of all varieties of malignancy in this situation, unless the recent attempts to apply radiotherapy within cavities can be improved; and it is evident that when applied in inoperable cases it will not only give a fighting chance of ultimate cure, but, by reason of the immediate relief it affords to the hemorrhage, pain and odor, it will become a valuable palliative and prolong life when a cure is impossible.

DISCUSSION.

DR. A. M. HAYDEN, Evansville, Ind.—I wish to know what results Dr. Massey has had; whether he has any statistics and any apparent cures, how long they have lasted, what stage they were in and whether they were diagnosed before the appearance of the offensive odor from the uterus.

DR. H. E. PEARSE, Kansas City, Mo.—I wonder why, in place of investigating this matter during the past years, the profession has always given it the very coldest welcome and the warmest opposition. In reality, it is a perfectly logical procedure. I tried it in three cases, and all three were failures, but I have not abandoned hope, because for fifteen years it was my pleasure to see case after case go to the surgeon for relief by operation, and it was my dismay to see every one of these cases come back to me, as a general practitioner, and seek for the relief that surgery could not give them. During five years I have seen an unlimited line of failures in

the operation for radical cure of uterine cancer. I now have one perfectly healthy case after nine years of postoperative life. We should look on this work of Dr. Massey's with at least a little bit of expectancy, and I hope he will tell us what he has accomplished.

Dr. G. B. Massey—The cataphoric method for the destruction of cancer has been used by me in as many as 63 cases in all portions of the body, but I have only had the opportunity to employ it in 7 cases of cancer of the cervix, and only 4 of these were treated exactly as described in the paper. There has been but one absolute and final success of the 7 treated—a case that had not been operated on previously, and in this case the patient remains well after the lapse of six years. All the rest were recurrences after knife operations, and, with the exception of one case that proved fatal from peritonitis within six days, they were all greatly benefited for a time, usually dying ultimately from a metastasis that must have been implanted before the application. But, whether the patient is suffering from metastasis or not, it is my conviction that this method offers the best chance for either the relief or cure of cancer in this situation.

EMPYEMA OF THE FRONTAL SINUS.

[Through inadvertence, the discussion at the New Orleans session on the paper of Dr. C. A. Thigpen, Montgomery, Ala., was omitted from THE JOURNAL, Nov. 14, 1903, page 1209. It was as follows:]

DISCUSSION.

Dr. Robert C. Myles, New York—The classic operation Dr. Thigpen performed is, in my opinion, always the proper one in this class of cases. He first provided for permanent drainage by removing the anterior end of the middle turbinal, some of the ethmoid cells, and also probably a part of the nasal process of the maxillary bone.

Dr. Gordon King, New Orleans—I want to emphasize the necessity in these chronic cases of a radical method of operation. I think all of us have had very disagreeable experiences very often of having these cases dragging on indefinitely by any method we may pursue. When the mucous lining of the cavity has become degenerated, sometimes forming polypoid masses that may almost occlude the cavity, it is necessary to scrape out the cavity. In those cases I do not see any other course of treatment to pursue except the radical method of opening the sinuses widely and then obliterating the cavity, whether you leave the cavity to become obliterated by a slow process of granulation, or close it up immediately and allow it to fill up from the inside, with the establishment of intranasal drainage. Even that is sometimes unsatisfactory, but not so unsatisfactory as the open method where you pack it as an external wound. Those cases are extremely unsatisfactory in their course. In the first place, it takes eight or nine months for them to finally heal up, and you have not only a depression but also an unsightly scar in a prominent place. A method with which I have had considerable experience has in a measure overcome that defect. It is the Ogston-Luc method, by which you open the cavity, clean it out and close it up, and the wound will heal beautifully, even after a large opening. It will go on very nicely for ten days or two weeks, however, and then it may again become obstructed. That takes place before the postoperative obliteration of the cavity. You are then forced sometimes to reopen the cavity and treat it externally. On this account some observers have lost confidence in that method. To overcome the difficulties an operation has been perfected which I think is satisfactory. There is a deformity of the face left, but with paraffin injections I think that can be overcome. The cavity is obliterated by the transplantation of a periosteal-cutaneous flap into the wound. The cavity is opened widely; it is scraped out thoroughly, no attention is paid to the intranasal drainage, and the wound is sutured afterward, except the external part of the wound. Obliteration of the cavity takes place immediately and recurrence is almost impossible. The usual course of these cases is an uneventful recovery in two or three weeks. I favor a modification of that method, which solves the question of drainage. That is simply complete obliteration of the cavity and intranasal drainage combined, so that the entire wound can be sutured up and drainage can be secured through the nose. There is no danger of the formation of a fistula. I have adopted that recently in a double empyema where the cavities were enormous and opened into one chamber. The process had gone on to the destruction of sight on one side before I saw the case. Healing took place in ten days with no bad features whatever following. That I believe to be one of the best operations we have in these cases.

Dr. Otto T. Freer, Chicago—In Killian's recently perfected operation for the complete obliteration of the frontal sinus in cases of chronic suppuration, he removes the entire front wall of the frontal sinus with the exception of a slender bridge of bone whose lower border is the supra-orbital margin. In addition he resects the frontal, also called nasal, process of the superior maxillary bone, making a broad opening as far back as the lachrymal bone, as far toward the center as the nasal bone and as far upward as the lower margin of the bridge mentioned. This gives most convenient access to the outlet of the sinus, the frontal and anterior ethmoidal cells and middle turbinated body. Killian also removes the orbital floor of the sinus so that the orbital fat may rise to help fill the hollow left by the obliterated sinus and the deformity thus becomes less than if only the front wall were removed. Killian's results have been perfect and his photographs show very slight disfigurement. I have done the operation on the cadaver only, but have been impressed with the ease of its performance, its precision and the easy access obtained to the ethmoidal cells both anterior and posterior. It is also possible to reach the sphenoidal sinus through the opening left by the removal of the frontal process.

Dr. Adolph O. Pfingst, Louisville—I wish to commend the method of Kunst and Luc, mentioned by a preceding speaker. I believe the operation described by Kunst should be done to get the best drainage. At first it struck me that drainage would not be proper in these cases. It has been suggested to introduce drainage tubes, but in the limited number of cases which I have treated I did the operation without drainage tubes. In two cases operated on by this method there has been no recurrence. There has been considerable work done on this subject in late years, but we have not really done enough along this line. Most of us do not care to see these cases come to us because at the best they are ungrateful in their results. We ought to give the subject more attention.

Dr. George L. Richards, Fall River—The question of deformity must not be too lightly overlooked. Deformity in the United States and deformity in Germany are two very different things. I have seen cases in Jansen's clinic with eyes looking in different directions; if such cases were to occur in this country they would be an unpleasant advertisement. Sometimes it may be just as well to be a little less radical and take a little longer to do the radical operations recommended by some of the German operators. You can put in a drainage tube and all that, but the opening into the nose usually sooner or later closes. You can maintain the external opening for a long time by putting a small silver or gold tube in the wound. I have had dentists make them with a little rim so they can not slip in. Cases sometimes show bulging from pus after apparent cure and the wound can be reopened if necessary rather than to do at first the very radical operation. The tube can be kept in almost indefinitely when the operation is done above the inner angle of the eye, and finally it may be removed and the hair of the brow grows over the wound so that the scar is almost imperceptible.

Dr. H. Dupuy, New Orleans—Dr. Lake of England has recently recorded three fatalities in his own practice where he had completely closed the wound, although he had free irrigation through the nose. It seems that the diploë of the frontal bone is very likely to receive infection, and by this means in two of his cases infection was carried to the brain. A recent experience in a case I have just reported to our state society has inclined me to the method of incomplete closure of the wound. Presuming there has been made a horizontal incision to the eyebrow, then after the operation I put in two or

three sutures from the outside, leaving an opening along the median line through which the packings may be introduced and drainage secured. In less than six weeks, in the case of a small frontal sinus, it was completely closed by granulations.

DR. E. FLETCHER INGALS, Chicago—I reported a case not long ago in which I succeeded in curing suppuration of the frontal sinus by a 4 per cent. solution of protargol, after the suppuration had continued for ten years. The man had been under my care for some time, but he had refused operation. By antiseptics we can frequently cure these cases without operation. In the cases in which I have made a radical operation I have put in a drainage tube from above; this tube has a flange at the upper end to prevent it from slipping down, and is somewhat funnel-shaped at its lower half so it will not work up. In one case where the posterior wall of the frontal was found completely destroyed at the time of operation I kept the external wound open between the eyebrows by a short rubber drainage tube flanged at both ends. This enabled the patient to cleanse the cavity easily. She refused to have the wound closed, although there was free drainage through the nose. The last I saw of her, about two years after the operation, the wound was still open. It is well to leave the external opening in such cases until we are sure suppuration has ceased.

DR. C. A. THIGPEN, Montgomery, Ala.—It was not my intention to dwell on the various operative procedures for frontal sinus disease. With regard to the operative technic the more I have operated the more conservative I have become, and before doing any external operation, the anterior portion of the middle turbinate should be removed and the probe introduced into the sinus to ascertain its upper boundary; from this point I open the cavity and drill downward and backward into the nose. Special attention should be directed to the nasal process of the superior maxillary bone, drilling away as much of it as possible, as advocated by Dr. Myles. Since following this teaching I have not failed to relieve my cases, and thus forego the necessity of a more mutilating operation.

THE CULTIVATION OF TRYPANOSOMA BRUCEI.

A PRELIMINARY NOTE.

(From the Hygienic Laboratory, University of Michigan.)

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At the New Orleans meeting of the American Medical Association we presented before the Section on Pathology and Physiology the results of our work on the cultivation of the ordinary rat trypanosome, *Trypanosoma lewisi*. The paper itself has appeared since then in the Vaughan *Festschrift*.[1] The results obtained mark a distinct advance in our knowledge of the animal parasites since this was the first time that a pathogenic protozoön was successfully cultivated and its relation to the disease demonstrated by inoculation of pure cultures. At that time we expressed the belief that the methods employed would probably be found to be applicable to other trypanosomes, and this view we have been able to confirm with reference to one of the most important organisms of this group, namely, *Trypanosoma brucei*, the cause of nagana or the tsetse-fly disease of South Africa.

The nagana material necessary for this work was kindly supplied us by Dr. H. Wolferstan Thomas, late fellow at McGill Medical College and now of the Liverpool School of Tropical Medicine. We take this occasion to express our grateful appreciation of the courtesy thus extended. It should be further stated that this material is lineally descended from that brought to England from Zululand in the fall of 1896 by Dr. Waghorn, and therefore it is the same as that employed by Kanthack, Durham and Blandford, by Plimmer and Bradford, by Laveran and Mesnil and other European workers, with the exception of Martini.

It has been shown that the *Trypanosoma brucei* dies out very rapidly in the cadaver, sometimes within a few hours, and that this occurs even when the blood is transferred to a tube. The longest that any one has been able to keep the parasite alive *in vitro* has been about six days. Under these conditions no evidence of multiplication has been observed. The virulence of the blood when kept in tubes is preserved longer than when the blood remains in the cadaver, but, only exceptionally, has it been found to persist up to the fourth day. It seemed as if this organism was essentially an obligative parasite and as such incapable of existing outside of the living animal.

The methods which we have employed are the same as those used for cultivating the rat trypanosome, and for that reason need no description at this time.

The culture medium employed in all of our work was ordinary nutrient agar, containing variable amounts of defibrinated rabbit blood. In the water of condensation, which accumulates in tubes or flasks containing this medium, the rat trypanosome grows readily and luxuriantly. No difficulty is experienced in starting an initial culture of this trypanosome from the blood of an infected animal.

The nagana trypanosome does not take readily to this same medium, and a great deal of difficulty was experienced in obtaining cultures of this organism. When, however, an initial culture is once obtained, and the parasite has become used to its new soil, the subsequent cultivation is more easy.

Notwithstanding numerous modifications of our technic, all attempts to obtain cultures from the first twenty-five nagana animals failed. In the inoculated tubes the trypanosomes would usually die out on about the 5th to the 7th day; exceptionally they were found to be still alive on the 9th, 10th, 11th, 14th, and even on the 18th day. In these cases only a few survivals were left, most of the parasites having undergone degeneration and died. When the culture tubes were placed in the incubator the trypanosomes died out in two or three days.

The virulence of the fluid in the culture tubes was found to disappear usually on about the 4th or 5th day. In two instances, however, the surviving trypanosomes were found to be infectious on the 9th and on the 10th day. The infection in these instances was clearly due to the few cells which survived, since no evidence of multiplication could be detected. Frequently, such material, though containing living trypanosomes, failed to infect animals; a fact which goes to show that attenuation of the nagana parasite is possible. This we have been able to definitely establish with the pure cultures subsequently obtained.

From the second series of twenty-five nagana animals—white mice, rats and guinea-pigs—we succeeded in obtaining four positive cultures from as many different animals. The first of these, Culture A, was started August 27, and since that time has been carried through six successive generations *in vitro*. At the present time, November 12, it is in its seventh generation. In other words, this culture has been maintained under artificial

1. Contribution to Medical Research dedicated to Victor Clarence Vaughan, Ann Arbor, Mich., 1903, George Wahr, p. 549.

conditions for 77 days, and there is no apparent reason why it should not be cultivated indefinitely.

Culture B was started September 7, and during the next 52 days was carried through two generations. The third generation has as yet shown no growth, but probably will.

Culture C was started September 10, and is at the present time (63 days) in its third generation and is doing well.

Culture D was inoculated September 12, and the original tube contained living trypanosomes as late as the 45th day. A second generation, however, failed to take, probably owing to the feeble condition of the parasite.

It is difficult to furnish any satisfactory reason why only four animals out of fifty examined should have given positive results. There are obviously injurious substances present in the blood which tend to prevent the growth of the trypanosomes and eventually cause their destruction. Our efforts at present are directed at ascertaining the nature of these poisonous substances and to find means whereby this action may be counteracted.

When the nagana blood is planted on blood agar most of the trypanosomes rapidly die out; so much so, that an examination may fail to show a single living form and thus give rise to the impression that the culture is a failure and lead to the discarding of the tubes. And yet, a few surviving organisms are present and succeed in adapting themselves to the changed condition, and from these the culture begins. The whole phenomenon is very suggestive of a survival of the fittest.

The cultures of *Trypanosoma brucei* may be developed at room temperature, or at 25 C., or even at 34 C. At room temperature the growth is slow to come on, and, for that reason, the cultures will remain alive the longest. We have repeatedly found such cultures alive as late as the 45th day. When developed at 25 C., an excellent growth may be obtained in from 7 to 10 days, and may persist for several weeks. On the other hand, at 34 C. growth is possible, but the cultures die out in about a week. It may be stated at this point that when fully developed and actively motile cultures are placed at 34 C. they rapidly lose their virulence and die out in a few days.

The rat trypanosome, as already stated, grows readily on the blood agar medium and can be isolated from animals in nearly every trial. In this respect it will be seen that it differs materially from the nagana trypanosome, which only exceptionally yields to culture. While the former grows readily on media containing blood and agar in the proportion of 1 to 2, 1 to 5, and even 1 to 10, the latter can not be cultivated on a medium containing less than 1 to 1 of blood.

This fact may be utilized to separate the two trypanosomes when present in mixed infection in a rat. When a rat which contains *Tr. lewisi* is infected with *Tr. brucei*, both parasites appear in the blood and can be recognized, as Koch pointed out 5 years ago, by examining the blood. By injecting blood showing mixed infection into a dog, Koch was able to separate the nagana parasite from that of the rat. By means of our cultivation method, it is possible to plate out, as it were, the two organisms and obtain these in pure culture. The blood of the rat showing mixed infection when planted on blood agar (1 to 2), will give a rich growth of only the rat trypanosome, since the nagana parasite is unable to grow on this medium. If at the same time a portion of the blood is inoculated into a mouse or animal other than a rat, the nagana trypanosome will develop and eventually cause death. From the blood of this animal, by inoculating a 2 to 1 blood agar medium, it may be possible to obtain a pure culture of *Tr. brucei*.

The *Tr. brucei* as found in the blood of an animal is exceedingly virulent and an extremely minute amount of such blood is sufficient to cause the death of an infected animal. The result is much the same whether the parasites are very numerous or so few as to be scarcely detected under the microscope. From this it would appear that the virulence of *Tr. brucei* is a fixed and constant quantity.

TABLE SHOWING RESULTS OF INOCULATION OF CULTURES DEVELOPED AT 25 C.

	Culture and Generation.	Blood-agar.	Age of Culture.	Date of Inoculation.	Date of Appearance of Trypanosomes.	Date of Death.	Time Before Death.
Mouse 3	A iii.	2:1	7 days	Oct. 5	Oct. 14	Oct. 16	11 days.
Rat 1	"	"	"	"	"	" 16	11 "
Control mouse 9	A iv *a* flask	3:2	9 days	" 14	Oct. 19	" 22	7½ "
Control mouse 10	"	"	"	"	" 19	" 21	7 "
Mouse 1, 2d injection	"	"	"	"	" 21	" 23	9 "
Mouse 2, 2d injection	"	"	"	"	" 19	" 24	9½ "
Mouse 16, 2d injection	"	"	"	"	" 21	" 23	8½ "
Mouse 11	A v *a* flask	"	6 days	" 21	" 26	" 29	7½ "
Rat 2	"	"	"	"	" 28	Nov. 2	11½ "
Mouse 6	C ii	1:1	12 days	" 11	" 16	Oct. 16	8 "
Mouse 5, 2d injection	A iv.	"	18 days	" 23			Recovered.
Rat 5	A v *b* flask	"	10 days	Nov. 4		Nov. 8, a.m.	3½ days.

A study of the artificial cultures, however, shows that the virulence of this organism is variable and that it can be altered at will. This is an exceedingly important fact, since by means of attenuated cultures it may be feasible to secure the much-desired immunization.

The intraperitoneal injection of virulent cultures of *Tr. brucei* causes death in mice and rats in about 7 or 8 days, exceptionally as late as 11 days. When it is remembered that these animals usually die in from 3 to 5 days after the inoculation of virulent blood, it will be seen that these cultures are already somewhat attenuated. The retarded death is not due, as might be supposed, to the injection of a small number of trypanosomes, since the cultures injected are extremely rich in actively motile parasites. In a few instances, our mice and even rats died in 3½ and in 5 days.

The following table shows the results obtained by inoculating cultures developed at 25 C. These results prove that the organism cultivated is in reality the nagana trypanosome. Moreover, since these inoculations are made with pure cultures they furnish the final evidence, if it be needed, that this trypanosome is the cause

of nagana. The trypanosomes which appear in the blood of the infected animals are in every respect the same as those met with in the animals infected with nagana blood.

When a virulent culture, developed at room temperature or at 25 C., is placed at 34 C., for a day or two it becomes less active and non-infectious. The loss of virulence is not due to the death of the trypanosomes, for these may remain alive and apparently uninjured for several days. Eventually, however, they develop numerous globules within the cells, change into spherical involution forms and finally die out.

Our experiments on immunizing animals against nagana are not far enough advanced to warrant making any definite statement. An inspection of the table will show that in one experiment two control mice, Nos. 9 and 10, died in 7 and 7½ days, while three animals which received a single injection of living, but non-virulent trypanosomes, died in 8½, 9 and 9½ days after infection. This would indicate that a slight protection had been afforded by the single injection. Of course, more definite experiments will be needed before positive conclusions can be drawn. Such work is at present being carried on.

The cultivated *Tr. brucei* is readily distinguishable from that of *Tr. lewisi*. Thus, while the latter has almost homogeneous contents, the former is characterized by the presence of two or more bright, highly refracting globules, usually placed near the anterior or flagellar end. At times, the number of these globules is increased, as when the culture is kept at 34 C. In size these globules may attain one micron.

The *Tr. lewisi* varies considerably in size. Some forms are found which are not more than one or two microns long, not including the whip. Others are about the diameter of a red blood cell, while usually they average about 15 to 20 microns.

The *Tr. brucei* shows less variation in size and averages 15 microns in the living condition.

The motion of the two organisms is entirely different. Thus, while the rat trypanosome is frequently seen darting about in an almost straight line and with great speed, the nagana parasite usually shows only a slow, wriggling motion and scarcely departs from its place. The wave motion passes slowly along the thick undulating membrane and imparts the appearance of spiral rotation to the entire cell.

The most striking difference is perhaps seen in the appearance of the colonies or aggregates. The *Tr. lewisi* forms aggregates of spindle-shaped forms, consisting at times of many hundreds and even of thousands of cells. The cells composing these masses show a slight swaying motion and their whips seem to be directed centrally. The *Tr. brucei* rarely forms masses of more than 10 or 20 cells. The individuals are long, narrow and show the peculiar writhing motion. The flagella are directed outward and the appearance of the whole may be compared to the snakes on a Medusa head. The stellate group with the bright, refracting globules within the cells, suggests a jeweler's "sun-burst."

This paper is intended to briefly summarize the main facts arrived at in our studies up to the present time. The full details may be expected in a later publication.

Physicians, as a rule, do not write enough about their experiences. They have valuable practical knowledge which it would benefit themselves and the profession to publish. But they wait, because they think it necessary to write a long, big-worded article when really a short letter or description would be of more interest.—*Medical Summary.*

AN ANALYSIS OF FIFTEEN HUNDRED CASES OF TUBERCULOSIS

DISCHARGED FROM THE ADIRONDACK COTTAGE SANITARIUM FROM TWO TO EIGHTEEN YEARS AGO.

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In a disease of so relapsing a nature as tuberculosis the inexorable test of time is rarely applied in the study of the results obtained by any form of treatment. The object of this research has been to apply this crucial test to the permanency of the beneficial effects which are undoubtedly obtained by the sanatorium treatment of pulmonary tuberculosis. The results of treatment in this disease vary directly with so many factors that it is exceedingly difficult to compare the results obtained by different observers. The use of different classifications, and in some instances the different interpretation of the same classification render any comparison a difficult task. Take, for example, the terms "apparently cured" and "cured." One observer applies them to patients who have gone a few months without symptoms and whose physical signs, if at all abnormal, are indicative of a healed lesion. Another thinks the time should be six months, a third one year, and possibly interprets the physical signs differently. It is to be hoped before long we shall have in America one classification adopted by the various sanatoriums. The classification adopted by Dr Trudeau has been retained in these statistics, not because he claims it to be entirely satisfactory, but because it is the one which has been applied from the first and throughout the past eighteen years to the cases on which this study is based. The classification is as follows:

Incipient Stage.—Slight local, with little or no constitutional involvement.

Advanced Stage.—The localized disease process extensive or in an advanced stage, or slight local pulmonic invasion with rather marked constitutional involvement or with complications.

Far Advanced Stage.—Marked signs of pulmonic disintegration with marked constitutional symptoms.

Improved Condition.—Physical signs showing process less active, or general health improved with symptoms relieved or abated.

Arrested.—No activity in process in lungs, with absence of fever and other constitutional symptoms.

Apparently Cured.—Abnormal physical signs absent, or if present only slight and indicative of healed lesion. Absence for some months of pyrexia and of sputum or of sputum containing tubercle bacilli.

Perfectly Cured.—Abnormal physical signs absent, or if present only slight and indicative of healed lesion. Absence for two or more years of pyrexia and of sputum or of sputum containing tubercle bacilli.

In order that the results of the treatment by the fresh air and rest cure at the Adirondack Cottage Sanitarium may be fully understood, it is necessary to consider for a moment the difficulties under which the work was begun. When the institution was first started, Dr. Trudeau, owing to popular prejudice, had great difficulty in persuading patients to enter, and as a result many cases entirely unsuited for sanatorium treatment were admitted. A glance at the relative proportion of incipient, advanced and far advanced cases admitted during the first few years will make this clear. Of the first 500 patients 21 per cent. were

in an incipient stage, 48 per cent. in an advanced, and 29 per cent. in a far advanced stage. During the year ending Nov. 1, 1902, 165 patients were discharged. Of these on admission 31 per cent. were in an incipient stage, 46 per cent. in an advanced and 3 per cent. in a far advanced stage. Had such figures obtained during the first years of the institution the results would no doubt be very different.

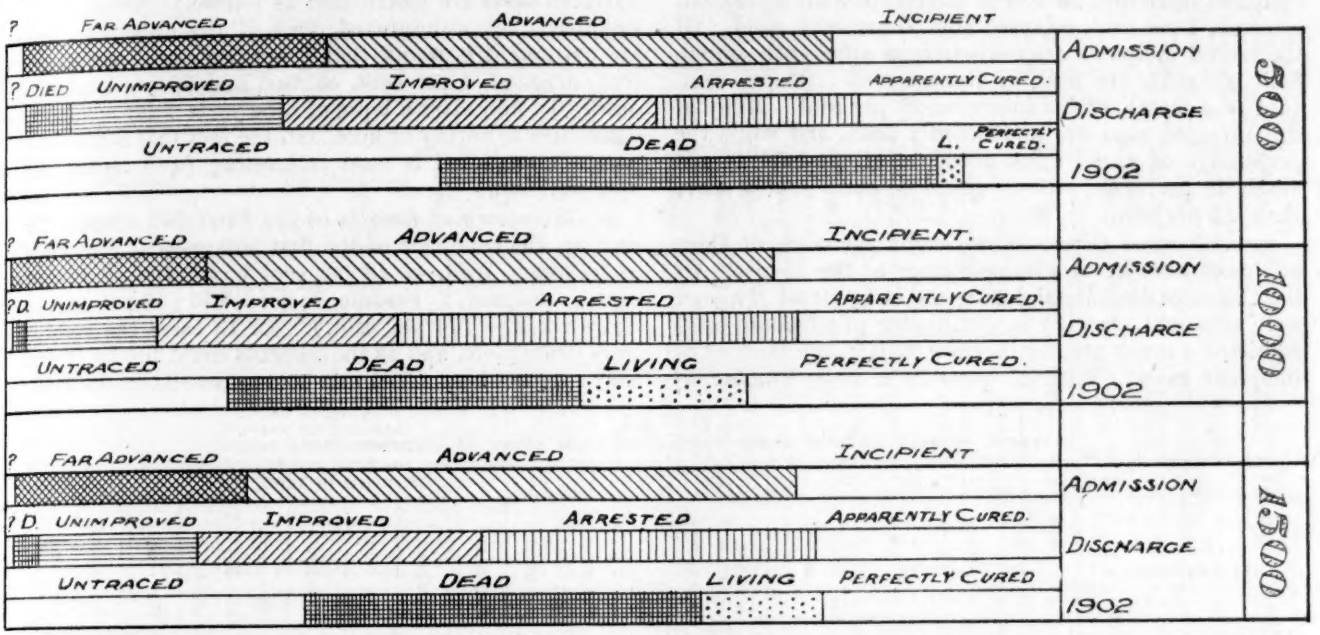

Chart 1.—Graphic representation of Tables 1, 2 and 3. The space marked ? indicates doubtful cases. The space marked "living" includes chronic and relapsed.

I.—RESULTS OBTAINED IN 500 CASES DISCHARGED FROM EIGHT TO EIGHTEEN YEARS AGO.

The first 500 cases were admitted during a period extending from May 12, 1885, to July 1, 1893, a little more than eight years. The last of the patients was discharged nine years ago. Owing to the fact that it has not been possible until recently to trace the patients systematically many of the early cases have remained untraced. These untraced cases compose 43 per cent. of the first 500.

A.—*Incipient Cases.*—It has been long recognized that the curability of pulmonary tuberculosis depends directly on the stage of the disease. This has been found to hold true among these cases. The 103 incipient cases were discharged as follows: Apparently cured, 73 (71 per cent.); arrested, 12; improved, 12; unimproved, 6. At the present time there are: Well, 23 (22 per cent.); arrested, 1; relapsed, 2; dead, 26; untraced, 51. Of the 73 apparently cured cases 18 are well, while 3 of the 12 arrested, 2 of the 12 improved and none of the 6 unimproved are well. It is interesting to note among the incipient cases that at the present time about the same percentage of cures are obtained from those discharged apparently cured, arrested and improved. Twelve of the 73 cases discharged apparently cured, 2 of the arrested,

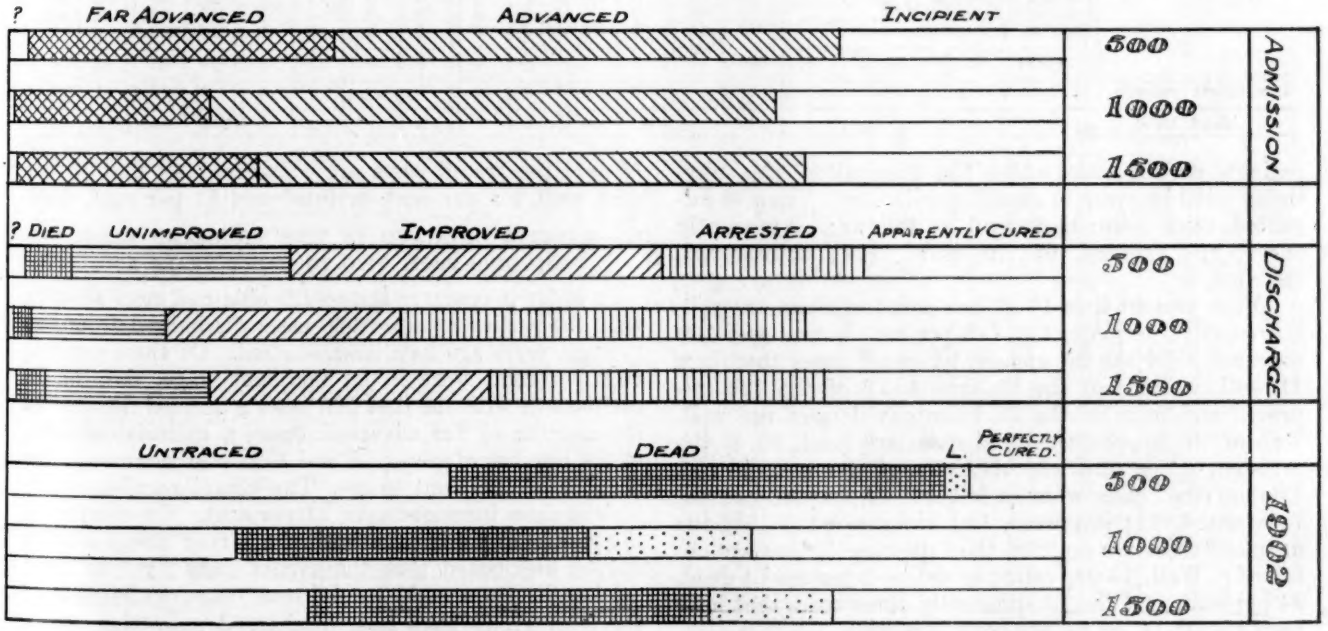

Chart 2.—Graphic comparison of condition on admission, on discharge, and in 1902.

8 of the improved and 4 of the unimproved are dead. The untraced cases are distributed according to the condition on discharge as follows: Apparently cured, 40; arrested, 7; improved, 2; unimproved, 2.

If, however, for a moment we exclude those cases that have not been traced, we find that 44 per cent. of the incipient cases that have been traced are well, 2 per cent. arrested, 4 per cent. relapsed and 50 per cent. dead. Of the traced incipient cases discharged apparently cured, 54.5 per cent. are well, of those arrested 60 per cent. (out of 5 cases), of the improved 20 per cent. Many of the untraced cases are undoubtedly dead, and while the percentage of cured cases would in all probability not reach 44 per cent., still it would be considerably more than 22 per cent.

B.—*Advanced Cases.*—Forty-eight per cent. of these 500 cases were in an advanced stage of the disease. Of the 165 cases discharged during the last year 64 per cent. were advanced, showing in the number of advanced cases admitted a much greater increase than in the number of incipient cases. Without question a large number of patients do not come under the observation of a physician until they are in an advanced stage. The 240 advanced cases were discharged as follows: Apparently cured, 20; arrested, 62; improved, 124; unimproved, 28; died, 6.

At the present time 17 (7 per cent.) of these are well, 5 arrested, 1 chronic, 117 (48 per cent.) dead and 100 untraced. Of the 20 apparently cured cases there are 11 well, while 4 of the 62 arrested, 2 of the 124 improved and none of the 28 unimproved cases are well. Two of the apparently cured cases are dead, 33 of the arrested, 55 of the improved, 21 of the unimproved. The untraced cases were as follows: Apparently cured, 7; arrested, 21; improved, 65; unimproved, 7. If the untraced cases are omitted the following figures are obtained: Well, 14 per cent.; arrested, 3 per cent.; dead, 84 per cent. Of the 13 apparently cured cases that have been traced 11, or 84 per cent., are well.

C.—*Far Advanced Cases.*—It is most gratifying to note the decrease in the far advanced cases. Of the first 500 cases 29 per cent. were far advanced, while last year the percentage was only 3. The 146 far advanced cases were discharged as follows: Apparently cured, 0; arrested, 19; improved, 41; unimproved, 70; dead, 16. At the present time there are: Well, 2; arrested, 1; chronic, 1; dead, 90 (62 per cent.); untraced, 52. The 2 cases now well were discharged as unimproved. Of the 19 arrested cases 12 are dead, while 22 of the 41 improved, 40 of the 70 unimproved cases are dead. The untraced cases are distributed as follows: Arrested, 6; improved, 18; unimproved, 28. If the untraced cases are omitted it is found that 2 per cent. are well, 1 per cent. arrested, 1 per cent. chronic and 96 per cent. are dead. To find after a lapse of nine years 4 far advanced cases alive is worthy of note, and the fact that 2 have apparently recovered is most interesting (and recalls the *spes phthisica.*

D.—*Summary of Results in the First 500 Cases.*—To sum up, the condition of the first 500 cases at present is as follows: Well, 42 (8 per cent.); arrested, 7 (1 per cent.); relapsed, 2; chronic, 2; dead, 233 (46 per cent.); untraced, 214 (44 per cent.). In 11 cases the records were incomplete, and as the patients could not be traced they have not been taken into account except in the total. If only the traced cases are considered we find 15 per cent. well, 2.4 per cent. arrested and 81 per cent. dead.

TABLE I.

ANALYSIS OF FIVE HUNDRED CASES DISCHARGED FROM EIGHT TO EIGHTEEN YEARS AGO.

Condition.				Condition in 1902.											
On Admission.	On Discharge.	Number.	Percentage.	Well.	Per cent.	Arrested.	Per cent.	Relapsed.	Per cent.	Chronic.	Per cent.	Dead.	Per cent.	Untraced.	Per cent.
Incipient	Ap. cured	73	70	18	25	1	1	2	2	0	0	12	17	40	55
	Disease arrested	12	12	3	25	0	0	0	0	0	0	2	16	7	59
	Disease improved	12	12	2	17	0	0	0	0	0	0	8	66	2	17
	Disease unimproved	6	6	0	0	0	0	0	0	0	0	4	67	2	33
	Total	103	..	23	22	1	1	2	2	0	0	26	25	51	50
Advanced	Ap. cured	20	8	11	55	0	0	0	0	0	0	2	10	7	35
	Disease arrested	62	26	4	6	3	5	0	0	1	1	33	54	21	34
	Disease improved	124	51	2	2	2	2	0	0	0	0	55	44	65	52
	Disease unimproved	28	12	0	0	0	0	0	0	0	0	21	75	7	25
	Died at sanitarium	6	3	0	0	0	0	0	0	0	0	6	100	0	0
	Total	240	..	17	7	5	2	0	0	1	0	117	49	100	42
Far advanced	Disease arrested	19	13	0	0	0	0	0	0	1	5	12	63	6	32
	Disease improved	41	28	0	0	1	2	0	0	0	0	22	54	18	44
	Disease unimproved	70	48	2	3	0	0	0	0	0	0	40	57	28	40
	Died at sanitarium	16	11	0	0	0	0	0	0	0	0	16	100	0	0
	Total	146	..	2	2	1	1	0	0	1	1	90	61	52	35
Incomplete records		11	..	0	0	0	0	0	0	0	0	0	0	11	100
Grand total		500	..	42	8	7	1	2	1	2	1	233	46	214	43

II.—RESULTS OBTAINED IN ONE THOUSAND CASES DISCHARGED FROM TWO TO EIGHT YEARS AGO.

In order to compare the results obtained more recently with the earlier results 1,000 cases discharged from two to eight years ago have been studied. Of these patients 26.3 per cent. were in an incipient stage, showing in comparison with the first 500 cases a decided decrease in the number of far advanced cases, a material increase in the number of advanced and a decided increase in the number of incipient cases. The actual number of incipient cases increased over 31 per cent. On comparing the results of these cases with the earlier group it must not be overlooked that the earlier cases have all been discharged from eight to eighteen years, while none of the later group have been discharged more than eight, and some only two years.

A.—*Incipient Cases.*—The 263 incipient cases were discharged as follows: Apparently cured,[1] 172; ar-

1. Cases that remained at the sanitarium less than one week have been omitted, except in the tables.

rested, 71; improved, 17; unimproved, 2. At the present time there are: Well, 147 (57 per cent.); arrested, 12; relapsed, 12; chronic, 7; dead, 28 (11 per cent.); untraced, 57. Of the 172 apparently cured cases 113 (66 per cent.) are well, while 27 (38 per cent.) of the 71 arrested, 7 of the 17 improved and none of the unimproved are well. Ten of the apparently cured cases, 14 of the arrested, 2 of the improved and 2 of the unimproved cases are dead. The untraced cases are as follows: Apparently cured, 35; arrested, 16; improved, 6.

TABLE II.

ANALYSIS OF ONE THOUSAND CASES DISCHARGED FROM TWO TO EIGHT YEARS AGO.

Condition.				Condition in 1902.											
On Admission.	On Discharge.	Number.	Percentage.	Well.	Per cent.	Arrested.	Per cent.	Relapsed.	Per cent.	Chronic.	Per cent.	Dead.	Per cent.	Untraced.	Per cent.
Incipient	Ap. cured	172	65	113	66	3	2	9	5	2	1	10	6	35	20
	Disease arrested	71	27	27	38	7	10	3	4	4	6	14	20	16	22
	Disease improved	17	6	7	41	2	12	0	0	0	0	2	12	6	35
	Disease unimproved	2	1	0	0	0	0	0	0	0	0	2	100	0	0
	Stayed less than one week	1	1	0	0	0	0	0	0	1	100	0	0	0	0
	Total	263	..	147	56	12	5	12	5	7	2	28	11	57	21
Advanced	Ap. cured	70	13	43	61	1	1	4	6	1	2	7	10	14	20
	Disease arrested	276	51	76	28	40	15	20	7	17	6	73	26	50	18
	Disease improved	137	25	14	10	5	4	3	2	17	13	63	46	35	25
	Disease unimproved	50	9	1	2	0	0	0	0	3	6	31	62	15	30
	Died at sanitarium	4	1	0	0	0	0	0	0	0	0	4	100	0	0
	Stayed less than one week	1	1	0	0	0	0	0	0	0	0	0	0	1	100
	Total	538	..	134	25	46	9	27	5	38	7	178	33	115	21
Far advanced	Disease arrested	32	16	2	6	1	3	2	7	2	6	17	53	8	25
	Disease improved	75	38	1	1	3	4	1	1	6	8	47	63	17	23
	Disease unimproved	82	42	1	1	0	0	0	0	0	0	58	71	23	28
	Died at sanitarium	8	4	0	0	0	0	0	0	0	0	8	100	0	0
	Total	197	..	4	2	4	2	3	2	8	4	130	66	48	24
Doubtful cases		2	0	2	100	0	0	0	0	0	0	0	0	0	0
Grand total		1000	..	287	29	62	6	42	4	53	5	336	34	220	22

C.—*Far Advanced Cases.*—The 197 far advanced cases were discharged as follows: Arrested, 32; improved, 75; unimproved, 82; dead, 8. At the present time 4 (2 per cent.) are well, 4 arrested, 3 relapsed, 8 chronic, 130 (65 per cent.) dead, 48 untraced. Of the arrested cases 2 are well while 1 each of the improved and unimproved cases are well. Seventeen of the arrested cases, 47 of the improved and 58 of the unimproved are dead. The untraced cases are as follows: Arrested, 8; improved, 17; unimproved, 23.

TABLE III.

ANALYSIS OF FIFTEEN HUNDRED CASES DISCHARGED FROM TWO TO EIGHTEEN YEARS AGO.

Condition.				Condition in 1902.											
On Admission.	On Discharge.	Number.	Percentage.	Well.	Per cent.	Arrested.	Per cent.	Relapsed.	Per cent.	Chronic.	Per cent.	Dead.	Per cent.	Untraced.	Per cent.
Incipient	Ap. cured	245	67	131	53	4	2	11	4	2	1	22	9	75	31
	Disease arrested	83	23	30	36	7	8	3	3	4	5	16	20	23	28
	Disease improved	29	8	9	31	2	7	0	0	0	0	10	34	8	28
	Disease unimproved	8	2	0	0	0	0	0	0	0	0	6	75	2	25
	Stayed less than one week	1	0	0	0	0	0	0	0	1	100	0	0	0	0
	Total	366	..	170	46	13	4	14	4	7	2	54	15	108	29
Advanced	Ap. cured	90	12	54	60	1	1	4	4	1	1	9	10	21	24
	Disease arrested	338	43	80	24	43	13	20	6	18	5	106	31	71	21
	Disease improved	261	34	16	6	7	3	3	1	17	7	118	45	100	38
	Disease unimproved	78	10	1	1	0	0	0	0	3	4	52	67	22	28
	Died at sanitarium	10	1	0	0	0	0	0	0	0	0	10	100	0	0
	Stayed less than one week	1	0	0	0	0	0	0	0	0	0	0	0	1	100
	Total	778	..	151	19	51	6	27	4	39	5	295	38	215	28
Far advanced	Disease arrested	51	15	2	4	1	2	2	4	3	6	29	57	14	27
	Disease improved	116	34	1	1	4	4	1	1	6	5	69	59	35	30
	Disease unimproved	152	44	3	2	0	0	0	0	0	0	98	64	51	34
	Died at sanitarium	24	7	0	0	0	0	0	0	0	0	24	100	0	0
	Total	343	..	6	2	5	1	3	1	9	3	220	64	100	29
Doubtful cases		2	0	2	100	0	0	0	0	0	0	0	0	0	0
Incomplete records		11	0	0	0	0	0	0	0	0	0	0	0	11	100
Grand total		1500	..	329	22	69	5	44	3	55	4	569	37	434	29

B.—*Advanced Cases.*—The 538 advanced cases were discharged as follows: Apparently cured, 70; arrested, 276; improved, 137; unimproved, 50; dead, 4. At the present time: Well, 134 (25 per cent.); arrested, 46; relapsed, 27; chronic, 38; dead, 178 (33 per cent.); untraced, 115. Of the 70 apparently cured cases 43

SUMMARY OF RESULTS IN 1,000 CASES.

In other words, the condition at present of these 1,000 cases is as follows: Well, 28.7 per cent.; arrested, 6 per cent.; dead, 33.6 per cent.; untraced, 22 per cent. From this it is seen that 444 patients are alive, 336 dead and 220 untraced. Bearing in mind the fact that the patients of the first group were all discharged before the earliest cases of the second, it nevertheless appears that the patients of the second group have done better since discharge than those of the first group. Many of the untraced cases in both groups are undoubtedly dead. The reason why the percentages of the cases that have died do not vary more is probably due to the fact that in the second group a much larger percentage of the cases that have died have been traced. For this reason it is well to compare only the cases still alive in each group. Of the first group 10 per cent. of the cases are alive and 8 per cent. are well from eight to eighteen years after discharge. Of the second group, 44 per cent. of the cases are alive and 28.7 per cent. are well from two to eight years after discharge.

III.—RESULTS OBTAINED IN FIFTEEN HUNDRED CASES DISCHARGED FROM TWO TO EIGHTEEN YEARS AGO.

The number of cases discharged from the Adirondack Cottage Sanitarium until two years ago was 1,500. Of these 366 (24.4 per cent.) were incipient, 778 (51.8 per cent.) were advanced, 343 ((22.8 per cent.) were far advanced, 2 cases were doubtful and 11 cases had incomplete records.

A.—*Incipient Cases.*—The 366 incipient cases were discharged as follows: Apparently cured, 245 (67 per cent.); arrested, 83; improved, 29; unimproved, 8. At the present time 170 (46 per cent.) are well; 13 are in a state of arrest; 14 have relapsed; 7 are chronic; 54 are dead; 108 are untraced. Of the 245 cases apparently cured 131 are well, while 30 of the 83 arrested cases, 9 of the 29 improved cases and none of the unimproved cases are well. Twenty-two of the apparently cured cases are dead; 16 of the arrested, 10 of the improved, 6 of the 8 unimproved cases are dead. The untraced cases are as follows: Apparently cured, 75; arrested, 23; improved, 8; unimproved, 2.

B.—*Advanced Cases.*—The 778 advanced cases were discharged as follows: Apparently cured, 90 (11.5 per cent.); arrested, 338; improved, 261; unimproved, 78; dead, 10. At the present time 151 (19 per cent.) are well; 51 arrested; 27 relapsed; 39 chronic; 295 (38 per cent.) dead; 215 untraced. Of the 90 apparently cured cases 54 are well, while 80 of the 338 arrested, 16 of the 261 improved and 1 of the 78 unimproved are well. Nine of the apparently cured cases are dead; 106 of the arrested; 118 of the improved, and 52 of the unimproved. The untraced cases are as follows: Apparently cured, 21; arrested, 71; improved, 100; unimproved, 22.

C.—*Far Advanced.*—The 343 far advanced cases were discharged as follows: Arrested, 51; improved, 116; unimproved, 152; dead, 24. At the present time 6 (1.7 per cent.) of these are well; 5 arrested; 3 relapsed; 9 chronic; 220 dead, and 100 untraced. The cases that are well at present are as follows: Arrested, 2; improved, 1; unimproved, 3. Twenty-eight of the arrested cases are dead; 63 of the improved, and 45 of the unimproved.

SUMMARY OF RESULTS IN FIFTEEN HUNDRED CASES.

In all, 497 (33 per cent.) cases are alive; 569 (38 per cent.) are dead, and 434 (29 per cent.) are untraced. Of the 497 patients that are alive 329 (22 per cent.) are well; 69 (4.6 per cent.) are arrested; 44 (3 per cent.) relapsed; 55 (3.7 per cent.) are chronic.

If we deduct 434 untraced cases we have left 1,066 cases which have been traced. Of these 31 per cent. are well; 6.5 per cent. are arrested; 4 per cent. have relapsed; 5.2 are chronic; 53.3 per cent. are dead. Deducting from the number of incipient cases those that have been untraced we find that there are left 258 cases. Of these 66 per cent. are well and 21 per cent. are dead. Of the 563 advanced cases which have been traced 28.6 per cent. are well and 52 per cent. are dead; while of the 235 far advanced cases which have been traced 2.5 per cent. are well and 90 per cent. are dead. It must be remembered, however, that these figures are only approximately correct, as no doubt more of the untraced cases are dead than these figures would indicate.‡

Clinical Reports.

A CASE OF NEURITIS OF THE RIGHT INFERIOR DENTAL NERVE

INCIDENT ON FORWARD DISLOCATION OF THE MANDIBLE OF THREE YEARS' STANDING.*

GEORGE A. MOLEEN, PH.G., M.D.
DENVER.

Aside from its rarity, the following case will illustrate the importance of a clear history and complete examination even in such a simple malady as facial neuralgia. I acknowledge my indebtedness to Drs. Packard and Silverstein for their prompt care and treatment of what seemed to be the cause.

Mrs. L. K., aged 49, born in Lebanon, Pa., has been in Colorado three years and did not come for her health; occupation housewife. First seen Feb. 7, 1903.

Family History.—Parents born in Pennsylvania; mother died of la grippe, father from dropsy. There were fourteen in the family, of whom five sisters and two brothers are living, the remainder are dead from various irrelevant causes. Tuberculosis, other chronic diseases, insanity and nervous diseases are denied.

Past History.—Of the exanthemata she had diphtheria at 9; measles at 22; denies scarlet fever; has had no sequelæ nor has she at any time complained of aural discharge, dizziness or vomiting. Menstrual history good; climacteric six months ago. When young she complained considerably of toothache, and neuralgia was suggested. Shortly after her arrival in Colorado she began to have paroxysmal pain confined to the right side of face, which seemed to originate, according to her localization, about the right lower bicuspid. This was drawn without relief, and after several medical and dental examinations the lowers were drawn to no purpose, until finally, on the advice of a physician, all her teeth, upper and lower, were removed in April, 1902, without modifying her symptoms.

Present State.—She has slept little for three months past, on account of pain. She says sedatives have given but little relief. The paroxysms come on at varying intervals of from 3 to 10 or 15 minutes, and seem to be excited by movement of the jaw, as in eating or talking, and can be excited by forcibly depressing the jaw. They sometimes begin in the ear and at others in the alveolar process. During the paroxysm the face becomes pinched, the right side flushed, and in severe attacks perspires slightly on the right side only. The pupil of the right eye is seen to dilate when the eye is held open and her hands restrained. Between paroxysms she becomes quiet,

‡ Since the above was written 5 of the untraced cases have been found to be alive, making 502 cases alive. In 10 cases death was due to other causes than tuberculosis.

* Read before the Rocky Mountain Interstate Medical Association, Salt Lake City, 1903.

though she complains of prickling of the right side of the face and of numbness and tingling on the right side of tongue. Sometimes there is a roaring in the right ear and a burning sensation in the right nostril. She has been partially deaf for some time and can be made to hear with difficulty, though more readily in the right ear.

Examination.—Feb. 7 and 10, 1903. Well-developed German woman, with drawn, careworn, though anxious, expression. All voluntary and co-ordinate motion normal and equal. Reflexes normal and equal and there is no response on tapping the masseter. Tongue is protruded in the median line, without tremor.

Sensory phenomena are in the main normal throughout the body, though she has impaired tactile sensibility with hyperalgesia on right side of face, the outline of which is as follows: Beginning at the external angular process extending upward to about the bregma, then downward and apparently dividing the ear—i. e., the tragus is more hyperalgesic than the concha and pinna—continuing downward to about one-half inch below the angle of lower jaw and forward to about the median line. Touching the skin at this area is not perceived as readily as on the opposite, and when perceived is painful. Pressure over the mental foramen causes severe pain and sometimes excites a paroxysm, the same being true at the infra-orbital opening. The supra-orbital is seemingly no more sensitive on one side than on the other. The submaxillary gland is also very tender and excites an attack readily. The mucous membrane of the right nostril, as well as the same side of the tongue, was markedly hyperesthetic.

Special Senses.—Salt placed on the right half of the tongue in the usual manner was met by immediate signal, but the tongue was washed and wiped, avoiding the left side, without allowing her to withdraw it, and she was unable to recognize and name the substance, even after several attempts with sugar, vinegar, etc.; near the base of the tongue, however, i. e., at about the anterior pillar, she recognized readily. Taste was present throughout the entire left side of the tongue. When asked why she signaled, she stated that she felt it as rough and thought she could taste it, but it was the pain she perceived. There can be no evidence of interference with smell detected.

Diagnosis.—The foregoing was strongly indicative of some mischief along the two lower divisions of the fifth nerve, and especially the third, and that it was undoubtedly irritative in character, a cause was consequently sought.

It was noticed that on depression of the lower jaw the condyle became quite prominent on the left side of the face, about three-quarters of an inch in front of and slightly below the external auditory canal. The right side revealed a corresponding depression, the jaw then rotated laterally and with considerable force, and by examination it was found that when depressed the internal pterygoid muscle was in a state of tonic contraction.

It then seemed but fair to assume that the condyle of the right side was irritating the inferior maxillary nerve at or about the site of the otic ganglion, which assumption was cleared on a study of its communications and branches, viz.:

The second division was affected through the connection by means of the vidian and petrosal, with Meckel's ganglion.

The sympathetic connection afforded an explanation of the flushing, sweating and pupillary symptoms.

The branch of the tensor tympani explained the increased hearing on the affected side.

The chorda tympani accounted for the loss of taste in the anterior portion of the same side of tongue.

It will be seen that the area of the first division was exempt.

Treatment.—Just how long the displacement had existed, or when it occurred, could not be learned, and the patient was even ignorant of its existence.

On account of the probable filling of the glenoid cavity by fibrous tissue a brace was advised, which would constantly exert an upward and backward pressure on the chin and still allow movement of the jaw, also with spring compresses to avoid the lateral movement of the condyles. She was accordingly referred with the above suggestions. A brace was devised which met the indication, and iodids and small doses of mercury given for a time.

Course.—After 4 or 5 days the pain began to subside and in about 10 days disappeared entirely. The sense of taste returned rapidly and the hearing on the affected side diminished until equal to that of the other side. She continued wearing the brace until about June 22, when she developed pain in the tongue and was unable to protrude the organ. Whether it was due to irritation of the hypoglossal by the chin rest or not I can not say, though it disappeared in two or three days after removal of the brace.

About July 1, having removed the brace, she began to experience very severe paroxysms of pain, which she described as boring in character, and localized constantly at a point a little below the condyle of the same side. The attacks were therefore quite different from her former ones, there being no area of hyperalgesia, nor was the tenderness of the mental foramen as marked. There was no swelling or tenderness along the process at this time.

The possibility of neuroma at or about the point of irritation was considered, and Drs. Hopkins and Freeman were consulted regarding the advisability of operative interference,

The brace in position.

which now seemed to be the only means of affording her relief. During this time she was given three grains of codein in divided doses, in the course of three hours, which gave her more relief than three-eighth grain morphin. A small cyst was noticed at the angle of the jaw, internally, and opened without perceptibly influencing the symptoms.

The brace was reapplied and adjusted to increase the pressure on the chin, and at first had little effect. The potassium iodid and mercury (red iodid 1/50 grain) were resumed.

The pain gradually left her and at the present time she scarcely notices it. The brace has been kept in place steadily since, and she is still taking the iodids, mercury and codein, while enjoying her escape from the surgeon for the present.

DEATH BY LIGHTNING.

B. KELLY, M.D.

CLIO, IOWA.

A powerful man, weighing 212 pounds, 36 years old, was struck by lightning. In about 10 or 15 minutes I found him deeply cyanosed, skin relaxed and cool and the heart beating feebly, but there was no visible respiration. I gave him hypodermic injections of strychnin, whisky and finally the normal salt solution, keeping up artificial respiration for ten hours, when the heart failed. The face brightened slightly for a few moments under the artificial respiration and the heart at short periods beat stronger, but no farther reaction was obtained, the temperature steadily falling.

Finding literature scarce on the subject I will be glad to have some one state what would have been the prospects for a better result by the use of an electric battery.

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MENDEL'S LAWS AND RECENT ANIMAL EXPERIMENTS IN HYBRIDIZATION.

During the last decade perhaps no other set of scientific papers has called forth more discussion than have Mendel's memoirs on experiments in cross-fertilization of plants, which were briefly reviewed in a recent issue of THE JOURNAL.[1] Several experimenters have recently published their results obtained by cross-breeding animals, and earlier experiments have been reviewed in the light of Mendel's laws. The conclusions do not agree, however, as there is a difference in the interpretation of the results by different authorities. In 1885 Crampe published his results from crossing gray wild mice with albino mice, and these results are especially interesting because he was at that time not familiar with Mendel's laws. All the offspring coming from this cross were gray, the white being shut out (recessive). In the offspring from these hybrids the recessive characters reappeared. That is, there were 27.8 per cent. albinos and 72.2 per cent. colored mice. This is in close accord with Mendel's laws, as according to them there should be about 25 per cent. of albinos in this generation.

Von Guaita crossed Japanese waltzing mice with albinos and got hybrids resembling wild house-mice, both in color and behavior. There seems to have been here a reversion to the ancestral type. No albinos were found among the hybrids. From these hybrids, however, he got 14 albinos (31 per cent.) and 30 colored mice, some gray, some black, and some spotted. The albinism seems to have been recessive, in the Mendelian sense, but the variety of colors among the others is not in accord with Mendel's principles.

Cuénot crossed gray house-mice with white mice and invariably got gray hybrids, the white being recessive. These hybrids were mated and produced 270 young, 26.6 per cent. of which were albinos and 73.4 per cent. gray. The albinos produced only albinos in the succeeding generations. According to Mendel's laws, one-third of the grays should produce gray offspring and two-thirds of them should produce albinos and grays in the average proportion of one to three. It is not easy to select the constant grays from the hybrids and mate only hybrids, but Cuénot believes that the results are in close agreement with the demands of the law. From several matings of what he believes to have been hybrids coming from the first generation of hybrids he got 219 young, 21 per cent. of which were albinos and 74 per cent. gray.

Darbyshire mated Japanese waltzing mice with albinos, and the offspring, which represent 203 individuals, are all colored, but some of these are quite different from the Japanese waltzing mouse. There are no albinos, and none of these hybrids waltzes. He now mated some of these hybrids and got 37 offspring, 9 of which were albinos, approximately 25 per cent. Eight mice of this generation waltzed. In crossing albinos of the first generation of hybrids he got 39 albinos, 31 wild colored, 15 black and 3 yellow mice among the offspring. That is to say, there was a fairly sharp segregation into albinos and wild colored mice. According to Mendel's laws, there should be about 50 per cent. of albinos. The color of the eyes, however, does not follow Mendel's laws. Both the albinos and the Japanese waltzing mice have pink eyes, while the hybrids have dark eyes. If the pink eyes were recessive they should remain constant when both parents have pink eyes, and if they are dominant they should also be constant here.

Lastly may be mentioned Wood's records in hybridization of rabbits. This work was undertaken with a view of testing Galton's law of inheritance which may be stated here: "One-half of the heritage of any generation is derived from the parents, one-fourth from the grandparents, one-eighth from the great-grandparents, etc." Wood had black rabbits which were considered to be hybrids, and on mating them got 133 offspring, 21 per cent. of which were white. In mating black hybrids with albinos he got 40.3 per cent. albinos. In both of these experiments there were not quite enough albinos according to Mendel's laws. In mating albinos which came from black parents the offspring were always white. This result agrees with Mendel's laws, but it is entirely out of harmony with Galton's law.

It is seen from these experiments that most of the results agree fairly well with Mendel's laws, but there appear to be some exceptions. At present, however, the experiments are too few to draw positive conclusions from them, and as rabbits and mice are very complex organisms, it is possible that errors have crept in. It is left for the future, therefore, to determine how closely we can predict the characters of the offspring when the characters of both parents are known.

1. THE JOURNAL A. M. A., Nov. 7, 1903, p. 1146.

TUBERCULOSIS IN INDIA FAVORS KOCH'S VIEWS.

The problem of tuberculosis will not be worked out in one country or in one climate, and any one who bases his conclusions on the contracted view of his own personal experience is liable to be mistaken. There are many advantages in studying the disease under all conditions, requiring ranges of temperature, social and dietary customs, etc., which are not to be found in any one district or country.

The recent report of the health officer of Calcutta is somewhat to the point. As it appears from an abstract in the *Indian Medical Gazette,* tuberculosis is statis-

tically put down as furnishing 6.4 per cent. of the adult deaths in that city. The health officer, Dr. Cook, thinks that this is far too low a figure, and bases his opinion on several facts which seem to give it standing. For example, in the Medical College Hospital, Calcutta, 966 consecutive postmortems showed 13.4 per cent. of deaths due to pulmonary tuberculosis and 3.6 per cent. to other forms of tuberculosis. There are, moreover, he says, a large proportion of cases of tuberculosis that are not recognized. Calcutta is full of irregular practitioners of every sort, qualified and unqualified, and an immense number of tuberculous cases are registered under the names of dysentery, malaria, asthma, etc. Such cases come within the experience of every consultant physician.

It is well known that the tropics are no more exempt from tuberculosis than the temperate countries, but there are certain special phases that can be observed there, especially in a country like India, where religious and social customs have an important influence. Dr. Cook is inclined to think from his own Indian experience that there is some basis for Koch's utterances as regards the differences between bovine and human tuberculosis. The Indian experience shows that the Hindoos who eat no beef, who practically sterilize all the milk and cow-products they use, are no more exempt from tuberculosis than the Christian and Mohammedans in their midst. Another point raised is the comparative infrequency of tuberculosis in Indian children. This may possibly be accounted for by the late period of weaning and the almost universal practice of maternal nursing. Tuberculosis in India is, as a rule, a disease of adult life, and Dr. Cook seems to think that its propagation is almost always by contagion through sputum. The editor of the *Indian Medical Gazette* remarks that tuberculosis in all its forms is less frequent, according to his own observation, among native children than among those of the Eurasians or Europeans.

So far, Indian testimony seems to be in favor of the contagiousness of the disease and against Behring's theory of infant infection, though it is not, of course, conclusive, as there are too many elements to be considered. A thorough cosmopolitan study of the disease under all circumstances will assuredly be a valuable aid to the elucidation of its problems.

THE ARTIFICIAL CULTIVATION OF PATHOGENIC PROTOZOA.

Progress in the biologic sciences relating to medicine is dependent in large measure on special technical methods. This fact is particularly well illustrated by the history of bacteriology. The science of modern bacteriology is the direct outgrowth of the development, especially by Koch, of suitable media, more particularly solid media, on which bacteria will grow and multiply in a characteristic manner and in such form that it is possible to secure pure growths. Only in this way could it be possible to study adequately the cultural and other biologic peculiarities of bacteria and to obtain pathogenic bacteria in such form as to be able to subject them to various conditions and manipulations essential to investigations into the complex problems of immunity. The ingenuity required to secure pure growths on artificial media of some pathogenic bacteria is illustrated well in the case of the bacillus of tuberculosis, the gonococcus and the bacillus of influenza. Thus growth of the latter two is favored specially by the presence of certain constituents of human blood. And in spite of innumerable efforts, the peculiar requirements necessary to induce the bacillus of leprosy to grow on artificial media have not yet been discovered. This bacillus multiplies freely in the lesions of human leprosy, where it is readily demonstrable by special staining methods, but to this day pure cultures of the lepra bacillus have probably not been obtained. There are many diseases of undoubted infectious nature the unknown as well as the morphologically demonstrable pathogenic agents of which, so far as we know, are uncultivable with the methods now at hand.

Since it became established that certain diseases of man and animals were intimately associated with the presence of protozoa, which there was full reason to believe were specifically pathogenic, investigators have exercised the greatest ingenuity in order to devise suitable methods for their artificial growth. Success at last has crowned the efforts of Novy and McNeal, who have found that the trypanosoma of rats and of the tsetse-fly disease may be grown in the condensation fluid of agar mixed with rabbit's defibrinated blood—a really quite simple method. This being done, it was easy to take the next step, namely, to demonstrate the pathogenic powers of these trypanosomes by the injection of pure cultures. As indicated in their report in this issue of THE JOURNAL,[1] experiments in immunization are now feasible. The Ann Arbor investigators are therefore entitled to hearty congratulation on having succeeded in opening the way for the successful study of pathogenic protozoa in pure growths under artificial conditions along the same lines that have yielded such brilliant results in that other department of microbiology, namely, bacteriology.

May this prove to be but the beginning of a series of successful cultivations of microparasites of animal origin. Perchance we shall learn before long that colonies of protozoa can be grown on solid media as well. In bacteriology artificial cultures in liquid media preceded the development of the methods of cultivation on solid media, and it may well be that this will turn out to be the case with the animal microparasites also.

THE SELF-REPARATIVE POWER OF THE SPINAL CORD.

Some time ago we noticed editorially in THE JOURNAL[2] a remarkable case in a Philadelphia hospital in

1. See page 1266.
2. THE JOURNAL A. M. A., vol. xxxviii, p. 1626, June 21, 1902.

which, owing to traumatism and destruction of the cord, about three-quarters of an inch was resected and united again by sutures with the result of a partial restoration of function. There has been, so far as we know, no more recent report regarding the progress of this case in medical publications, though we have seen such notices in the daily press.

An almost equally remarkable case has just been reported by Dr. C. Harvey Rodi[3] of Calumet, Mich.: The patient was injured by a falling rock, and was operated on three hours after the injury. There was complete paralysis below the seat of fracture, and dislocation and fracture at the junction of the tenth and eleventh dorsal vertebræ. The ligamentous attachment of the tenth and eleventh spinous processes was severed and the arches separated so widely that the spinal canal was laid open and the cord exposed. The body of one of these vertebræ was fractured, and the cord was seen to be entirely severed save a filament about the size of a pin connecting the two parts which were separated about an inch. It is not stated that the cord was sutured, but portions of the articular process of the tenth and eleventh vertebræ were removed with a chisel to assist in reducing the dislocation and with a view to bony union. The wound was closed with silkworm gut, and a few strands inserted for drainage and a plaster jacket applied. The next day, it is reported, there was sensation a little below the pelvis; a week later sensation existed about the ankles, but paralysis continued for some time. A large deep sacral bed-sore appeared, there was incontinence of urine and of feces with cystitis; the patient nevertheless began to improve very rapidly, and is now—a year later—in control of both the sphincters and can go around on crutches. He claims to be getting stronger in his legs every day and looks forward to complete recovery. In this case the little band of spinal tissue seems to have acted like the catgut connection which has sometimes been made in widely-divided nerve suture, and as the route along which regenerated tissues can travel. It is hard to say what the actual condition of the cord is at the present time, but there certainly must have been a considerable restoration of structure to account for the restoration of function so far as it has progressed.

The case is well worth watching. Dr. Rodi had three local physicians examine the case at the time of the operation beside two medical students, and there seems to be no reasonable ground for questioning the facts. Our ideas not only as to regeneration of the nerves but also of the nerve centers seem likely to be somewhat revolutionized if such cases as this become very common.

ONE WAY OF DOING IT.

Our British contemporary, the *Medical Press and Circular*, editorially notices a peculiar method of revenging insults to the medical profession which, while we can not commend it, is perhaps somewhat excusable under the circumstances. In an Irish community certain of the public authorities had given out gratuitous and highly offensive utterances in regard to the medical profession in the district. The local branch of the British Medical Association made, our confrère says, an inarticulate but very effective reply. They did not resolve to boycott or refuse their medical services to the offending parties, but made a rule that special fees should be charged them and their families. The surest way to touch most people is through their pockets, and our contemporary hopes it will be effective in this case.

3. The Journal of the Michigan State Medical Society for November.

A REDISCOVERED TEST FOR MUMPS.

It is rather remarkable how well-known facts come to be rediscovered. There is probably no general practitioner of any experience in this country who has not heard of the diagnostic test for mumps—eating a pickle. In fact, it may be considered as a matter of universal knowledge. It seems, however, to have been only recently discovered abroad. A French physician reports in a Paris medical journal the value of vinegar or acetic acid as an early test for mumps and the directions are much the same practically as those in family domestic use in this country. The patient must swallow after the application of vinegar or acid, which causes a painful reflex secretion of saliva—the same old well-known phenomenon. That this idea is a new one in Great Britain also is apparently evidenced by the fact that our esteemed contemporary, the *British Medical Journal*, considered the article of sufficient importance to include it in its epitome of current medical literature in its issue of October 31.

THE DE NOVO ORIGIN OF INFECTIONS.

In a recent number of the *Lancet*,[1] Dr. H. Charlton Bastian advocates the *de novo* origin of a number of diseases considered by us as specially typical of bacterial infection. He bases his arguments on some experiments, made as far back as 1882 and 1884, and even earlier, of the production of so-called septicemias in the rabbit by the injection of putrid blood. One of these, the so-called Davaine septicemia, was undoubtedly a true septicemia, as we now understand the word. The other, Pasteur's septicemia, would probably be now more commonly recognized as a bacterial intoxication. The experiments to which he refers, however, can be usually assumed to be accounted for according to modern ideas of bacterial pathology, and his arguments based on these will not be held, by the modern pathologist, to carry much weight. He admits that it is not absolutely necessary to assume that bacteria can be produced *de novo*, but that they can be modifications of pre-existing and less virulent germs excited into active virulence by some special irritation. This is a modern view to some extent, and we may deem it possible. When, however, it is applied to such disorders as tuberculosis and leprosy, as in Dr. Bastian's article, our faith in his views is somewhat shaken. He seems to be positive, as he says when noticing Behring's recently enunciated

1. October 31.

opinions as to the latency of tubercle germs: "I, on the other hand, have proved the possibility of their *de novo* origin." Dr. Bastian's reputation as a scientific physician and an investigator is well established, but his earlier opinions in regard to the beginnings of life have long since been discredited. It would seem that he still holds to them, at least in a modified form. There is no necessity for believing that every inflammation or irritation is of bacterial origin, but that certain recognized disorders like consumption, leprosy, etc., are thus originated seems to be as much beyond question at the present time as any scientific fact. Dr. Bastian's paper is a sort of curiosity in its way, not only from what it really says, but also from what it infers; yet it will not, we think, give rise to any very serious questioning of the modern accepted views.

THE KAISER'S CASE.

The latest official reports from Germany, especially the details furnished by the operator, Dr. Moritz Schmidt, seem to give authoritative and trustworthy details as to the character of the growth that was removed from the throat of the German Emperor two weeks ago. Contrary to what was at first described, it is now announced that the polypus had no stem, as is usually the case, but spread itself over the surface, and especially over the free margin of the left vocal cord. For this reason the operation was more complicated than with an ordinary laryngeal polypus. The operation had to be done by a formal excision through surrounding tissues in order to enable the operator to obtain a grasp of the polypoid growth for complete removal. Perhaps the most discouraging part of the report is the fact that the entire left vocal cord was inflamed and reddish before the operation, and it is therefore expected that the return to normal conditions will require a rather prolonged period of convalescence. The fact that the so-called polypus was not pedunculated but sessile, would seem to indicate that it might be a neoplasm of infiltrating type, and in a position that is so prone to malignant degeneration as the larynx, this is not an encouraging feature of the case. The presence of some inflammatory reaction for a considerable period, and the fact that the scar of an operation of this kind is liable of itself to be a source of chronic irritation because of contractile tendencies inevitable in the new-formed tissues that will cover the defect, increases the possibilities of future malignant degeneration. When to this is added the discouraging factors in the Kaiser's personal history, the death of both father and mother from malignant disease, it can readily be understood why the matter causes serious apprehension in many minds. Professor Orth's very positive declaration of the non-malignancy of the growth was somewhat tempered by the fact that he considered certain elements in the tissues examined by him deserving of further investigation. While we certainly accept the statements of those who have charge of the case, as far as they go, and can not feel justified in taking a pessimistic view of the matter, it is well to remember at this time that on three separate occasions Orth's great predecessor, Virchow, was asked to examine portions of tissue removed from the throat of the Kaiser's late father, and on each occasion failed to find any sign of malignancy in them; and we all remember the outcome. We sincerely hope that these unfavorable possibilities—for they must at this time be regarded as such, and not as probabilities—may never be realized, for the German Emperor is one of the great moral forces in our generation.

DIABETIC FLOUR.

It has long been known from the analyses of Woods, Atwater and others that a number of so-called diabetic flours are not what they are claimed to be, and are only misleading and often injurious substitutes for the ordinary bread-making materials. It seems that some German and French manufacturers have succeeded in producing a gluten flour suitable for bread making, and similarly certain British makers have also approximately succeeded. It would appear that we have been less fortunate in this country; the New Hampshire State Board of Health has recently collected specimens of all the diabetic and gluten flours so advertised that were obtainable, and publish in their October report the results of an analysis of these samples. Out of 13 samples 7 had very little less than the average amount of starch, and only 2 samples were comparatively free from it. Neither of these two, however, were suitable for bread making, but were rather a sort of breakfast food or material for combination with almonds, etc., in preparing biscuits. A few others had a rather notably reduced amount of starch, and one, the soja bean meal, would be valuable as a substitute if it were possible to make a palatable bread from it. The results seem to show that many of the so-called diabetic foods, or gluten flours, are very little different from the whole wheat or graham flours, and have very little less starch than the ordinary white wheat flour. Some of the more highly-recommended and widely-advertised diabetic flours, the New Hampshire analyst says, "consist solely of whole wheat flour and by reckless misstatement and deliberate fraud are sold at enormous prices as a cure for diabetes." In a few cases the analyses show that the manufacturers have evidently tried with more or less success to produce a flour low in starch, and the judicious use of their products might be beneficial, but in any case the amount of starch present is high, and the flour must be used sparingly. The same results can be equally well obtained from diminishing the amount of ordinary bread material. There is a great deal of money in this manufacture, and the temptation for misrepresentation is great. One of the most disreputable methods employed is that noted in a recent British contemporary[1] where diabetic-flour manufacturers sent circulars to druggists all over Great Britain offering them 5 shillings for the address of every diabetic patient in their knowledge and thus endeavored to obtain surreptitiously and at the violation of professional confidence a means of advertising their wares. The concern thus acting is the Diabetes Flour Company of London, and its name should be remembered in case they attempt to introduce their products in this country.

1. Med. Press and Circular, Nov. 4, 1903.

Medical News.

CALIFORNIA.

More Bubonic Plague.—Three more deaths from bubonic plague occurred in San Francisco, October 20, 23 and 24.

Physician Aeronaut.—Dr. August A. Greth, San Francisco, has made a successful trip over San Francisco in a dirigible airship constructed by himself.

Smallpox.—In the Ophir district, Auburn, five cases have been discovered in one family.——During October 8 cases of so-called varioloid were reported in Sacramento.

To Clean Chinatown.—Mayor Schmitz of San Francisco has signed the ordinance passed by the board of supervisors appropriating $5,000 from the "Urgent Necessity Fund" to continue the work of thoroughly cleaning Chinatown and endeavoring to put that part of the city in sanitary condition.

Personal.—Dr. Ernest W. Fleming, Los Angeles, has returned from Europe.——Dr. and Mrs. Joseph Kurtz and daughter, Los Angeles, have returned after nearly a year abroad.——Dr. William F. Snow, assistant professor of hygiene at Leland Stanford University, has been made associate professor in the same department.——Dr. Aloysius P. O'Brien, San Francisco, has been commissioned colonel and surgeon-general of California.——Dr. Orra C. Hyde, Oakland, has been made resident physician in the St. Quentin prison.——Dr. J. Raymond Hurley, late U. S. M.-H. and P. H. Service, has accepted the position of surgeon on the Pacific Mail Steamship Company's steamer *American Maru*.——Dr. Melville M. Shearer, Santa Rosa, has been appointed a member of the advisory board recently formed to draft sanitary laws to be introduced at the next session of the legislature.——Dr. Ira B. Ladd, Stockton, has been re-elected physician of San Joaquin County.

COLORADO.

Deaths in the State.—During September 782 deaths and 22 still-births were reported, an annual mortality rate of 16.47 per 1,000, excluding still-births. Typhoid fever caused 51 deaths, diphtheria 14, and scarlet fever 5.

Communicable Diseases.—During September 123 cases of diphtheria were reported in the state, an increase of 14 cases over the preceding month; 62 cases of scarlet fever, an increase of 28 cases; 40 of smallpox, a decrease of 3 cases, and 386 cases of typhoid fever, an increase of 183 cases.

A Criminal Sentenced.—Dr. S. D. Van Meter, secretary of the Colorado State Board of Medical Examiners, informs us that Edward Reitzel, ex-convict of Pontiac Reformatory, alias Dr. George A. Elliott, alias George E. Cook, registered in Colorado by a stolen diploma from the Toronto University, 1896, was convicted of criminal abortion and sentenced November 14 to three years in the Colorado penitentiary. The details of this man's history, with his photograph, were published in THE JOURNAL, Jan. 3, 1903, page 42. Dr. Van Meter says further: "After skipping his bond in Colorado he changed the Elliott diploma to read George E. Cook, and registered it in Oklahoma. Accompanying it was an affidavit purporting to be from Dr. John B. Murphy, but which is a forgery throughout, the signature and all being in the handwriting of Reitzel's third wife, nee Mary Etta Inman. The real Dr. Elliott is practicing in Leamington, Ontario."

ILLINOIS.

Diphtheria Closes Schools.—A Decatur telegram reports that diphtheria has caused the closing of four schools in Long Creek and Mount Zion townships.

Personal.—Dr. Lee Smith has been elected chief of the medical staff of St. Joseph's Hospital, Bloomington, vice Dr. Charles R. Parke, removed from the city.——Dr. Ulric A. Bedard, Ste. Anne, has returned to America after a stay of three years in Paris.

Physician Breaks Laws.—At the semi-annual meeting of the Livingston County (Ill.) Medical Society, held in Pontiac, November 6, the censors reported that Dr. William L. Rabe, Dwight, had pleaded guilty to the charge of selling liquor to minors and he was accordingly expelled from the society.

Asylum Attendants Go Free.—The grand jury at Peoria found no indictment against the two asylum attendants accused of the murder of Thomas Hartley, the insane patient. The jury said they believed it would be impossible to show that the men were not defending themselves since no one saw the struggle except the participants.

Smallpox.—Ridgway has 8 cases.——The disease has appeared at Kewanee.——The quarantine of Joliet against Lemont was lifted November 11. Disease has not disappeared, but every precaution against its spread is being observed.——From 70 to 80 cases are said to exist in St. Clair County.——South Wilmington reports 6 cases.

State Charity Report.—The bulletin of the State Board of Charities for three months ended September 30 was issued November 10. The average number of inmates during the quarter was 10,826. The gross per capita cost of maintenance was $40.42 and the net per capita cost to the state $34.65. At the end of the quarter there was $4,710,924.27 in the state treasury to the credit of the institutions. The best record was made by the Illinois Eastern Hospital, Kankakee, where the net per capita cost for the quarter was only $29.21.

Chicago.

Presbyterian Hospital Concert.—The fifth annual concert for the benefit of this hospital on November 12 was well attended and netted about $7,500.

New Maternity.—The "Mercy Maternity" has just been completed as an adjunct to Mercy Hospital. The building is detached, and is under the charge of Dr. Joseph B. De Lee.

Deaths of the Week.—The deaths for the week ended November 14 were 484, equivalent to an annual mortality per 1,000 of 13.38, two deaths less than for the corresponding week of last year, and eight deaths more than for the previous week.

Gift to Wesley Hospital.—Rev. R. D. Sheppard of Evanston has offered $35,000 to Wesley Hospital toward paying off its indebtedness, provided the remainder, $25,000, is raised in two years. The trustees accepted the conditions and report that $17,000 of the necessary amount is already in sight.

Increased Mortality.—During the last thirteen years, 1890-1902 inclusive, the mortality from nephritis, heart disease and pneumonia has increased over that of the thirteen years, 1877-1890 inclusive, in the following ratios: Heart disease, 48 per cent.; pneumonia, 53 per cent., nephritis, 87 per cent.

Northwestern Faculty Changes.—At the meeting of the board of trustees of the Northwestern University, November 17, Dr. Charles L. Mix was elected professor of physical diagnosis to fill the vacancy left by the resignation of Dr. George W. Webster; Dr. Fred Menge was elected assistant professor of laryngology and rhinology, and Dr. William A. Mann was elected assistant clinical professor of ophthalmology and otology.

MARYLAND.

Personal.—Dr. Washington C. Claude, chief of staff of the Annapolis Emergency Hospital, has resigned.

Election of Officers.—The Frederick County Medical Society elected the following officers for the ensuing year: President, Dr. C. W. Goldsborough; vice-presidents, Drs. David M. Devilbiss and E. L. Beckley; secretary, Dr. Ira J. McCurdy; treasurer, Dr. William C. Johnson; librarian, Dr. Harvey F. Gitzendanner.

Emergency Hospital.—The Frederick County Medical Society's new hospital building will be formally opened December 1, with 25 beds. A board of trustees consisting of a number of physicians, with Dr. William H. Wagner as chairman, has been elected to manage the institution, which will be known as "The Emergency Hospital of Frederick County." Dr. Thomas Cullen, Baltimore, held a clinic before the society November 11, and read a paper.

Baltimore.

Deaths of the Week.—There were 190 deaths for the week ended November 14, five only being from typhoid fever.

Personal.—Dr. A. L. Frank has been elected president of the Hebrew Orphan Asylum and Hospital, vice Menka Friedman, deceased.

Another Ginger Death.—A case of death from wood alcohol poisoning was reported here on November 7 in a woman who had taken several doses of Jamaica ginger for "internal trouble." The attending physician's certificate was confirmed, on examination, by the coroner.

Tuberculosis Exposition.—Preparations are being consummated for the tuberculosis exposition, to be held here in January, under the combined auspices of the tuberculosis commission, the State Board of Health, and the Maryland Public Health Association. Details are in charge of Dr. W. S. Thayer, president of the commission; Mr. John M. Glen, secretary; Dr. John S. Fulton, secretary of the State Board of Health, and Dr. Marshall L. Price. Dr. Henry B. Jacobs has been elected chairman, and 250 prominent professional men and laymen have been asked to act as an advisory committee. A series of

lectures will be given, the object of which will be to present the extent and effects of the disease in a striking manner. The prevalence of the disease, its incidence on certain occupations and trades, and the various hygienic and personal factors which influence its spread will be shown. The pathologic exhibit will be arranged to show the effects of the disease on the various organs. Tuberculosis in the lower animals will also be fully illustrated. One section of the exhibit will be devoted to the various appliances used in the treatment and cure of tuberculosis. Hospitals and sanatoria will be illustrated by means of plans, elevations, photographs, models and by tables illustrating the cost and results of treatment. A number of special appliances will be shown for open-air treatment, among them portable houses, tents and special sleeping devices. This exposition will be the first of its kind ever held, and already has aroused considerable interest among physicians in this country and abroad. Among the sanatoria exhibited will figure about 75 American institutions and about 30 from abroad, of the latter the largest contingent will be furnished by Germany, the remainder being from France, England, Switzerland, Austria and Norway. The largest exhibit of the statistical and economic sides of the question will be furnished by Maryland. The influence of the disease on the birth-rate and school attendance, and the public and private cost, will be shown by means of charts and diagrams.

OHIO.

Adds Obstetric Department.—The Cincinnati City Hospital has added a department of obstetrics to be under the charge of Drs. William H. Taylor and George M. Allen.

Diphtheria.—Schools in Troy have been closed because of diphtheria.——Out of 39 children at the Holy Family Orphanage, Cleveland, 15 are said to be ill with diphtheria.

Personal.—Dr. Christian R. Holmes has resigned from the commission appointed to build the new city hospital, Cincinnati. Dr. Byron Stanton was appointed to fill the vacancy.

Change City Physicians.—The twelve district physicians formerly in the employ of Cleveland have been replaced by six, and the salary of five has been increased to $600 per annum. The physician for the first district, on account of extra duties, has a salary of $1,000.

Room for More Patients.—The board of medical advisers of the Cincinnati City Hospital, on the advice of the chief of staff, have thrown open three wards previously used as nurses' quarters, and have secured a building near by, to be used exclusively as a nurses' home.

Smallpox.—There are said to be 15 cases at Folk Station on the Cadiz branch of the Panhandle Railway.——The State Board of Health has been notified of 20 cases at Alliance, 10 at Marion, and 8 or 10 at Columbus Grove.——Portsmouth has quarantined against the districts affected with smallpox.

Staff Physicians Elected.—The election of staff physicians for the Cincinnati City Hospital resulted as follows: Physicians—Drs. George A. Fackler, Joseph Eichberg, E. W. Mitchell, Oliver P. Holt; neurologists—Drs. H. H. Hoppe, Frank W. Langdon; surgeons—Drs. N. P. Dandridge, Joseph Ransohoff, E. W. Walker, John C. Oliver; orthopedic surgeons—Drs. A. H. Freiberg, C. E. Caldwell; dermatologists—Drs. A. Ravogli, C. S. Evans; laryngologists and aurists—Drs. S. E. Allen, J. W. Murphy; oculists—Drs. Robert Sattler, D. T. Vail; obstetricians—Drs. W. H. Taylor, G. M. Allen; gynecologists—Drs. Charles A. L. Reed, John M. Withrow, C. L. Bonifield, Sigmar Stark; pathologists—Drs. H. W. Bettmann, Arch I. Carson; pediatrists—Drs. Allen G. Poole, B. Knox Rachford; neuropathologist—Dr. David I. Wolfstein; clinical pathological laboratory and museum—Drs. John E. Greiwe, director, William H. Crane, James R. Rowe, Carl Hiller, Alfred Friedlander, Horace J. Whitacre, Frank E. Fee; physician to the Branch Hospital—Dr. B. F. Lyle, assistant Dr. Cook; resident physician—Dr. John E. Stemler.

TENNESSEE.

College Opens.—Tennessee Medical College, Knoxville, opened for its fall session November 2.

Tribute to Dr. Mitchell.—Tributes were paid to the memory of the late Dr. Robert Wood Mitchell of Memphis in resolutions adopted by the Memphis and Shelby County Medical Society at a special meeting held November 3.

Society Elects Officers.—At the annual election of officers of the Greene County Medical Society, Dr. Claude P. Fox, Greeneville, was elected president; Dr. I. B. Brown, Moskeim, vice-president, and Dr. S. Walter Woodyard, Greeneville, secretary.

Knoxville Mortality High.—The report of the Knoxville Board of Health for October shows the highest death rate for that month since 1898. The deaths numbered 47, equivalent to an annual death rate of 14.10 per 1,000. Pneumonia heads the list, with tuberculosis a close second.

Personal.—Dr. Charles Brower, Nashville, has been seriously ill with septicemia resulting from an infected wound received during a surgical operation.——Dr. J. Sinclair Dye has been selected as city physician of Chattanooga, to assume office at the expiration of the term of Dr. Edward R. Wise, January 1, 1904.

Smallpox.—Robertson County has 23 cases and several points of exposure.——Lilly Bluff School, near Langford, has been closed on account of the disease.——The secretary of the State Board of Health fears that there will be a great deal of smallpox in East Tennessee this winter.——Cumberland County has its first case in two years.——In the Knoxville Isolation Hospital 100 cases are under treatment.

TEXAS.

Smallpox.—The health officer of Harrison County reports 13 cases of smallpox and 2 suspicious cases in the Harleston neighborhood in the western part of the county.——Marshall has two cases.

Portrait Presented to Health Department.—On request of Dr. Tabor, the family of the late Dr. Walter F. Blunt, who was connected with the state quarantine service for over a quarter of a century, has given a large well-framed crayon picture of the Doctor.

Yellow Fever Abating.—Dr. George R. Tabor, state health officer, reports the yellow-fever situation as follows:,

Actual conditions in Texas are as follows: About 700 cases, with 60 deaths in Laredo; 18 cases, 8 deaths in San Antonio, with no case reported in San Antonio for seven days; 5 cases, 2 deaths in Dewitt County.

These are the only places of infection in Texas, and it is a true statement of existing conditions. Two frosts have fallen in Bexar and Dewitt counties. Conditions are favorable in Bexar, and I apprehend no further cases. Cases in Dewitt County confined to one house, with no other house nearer than one mile. Disease is ended there. Laredo is well quarantined.

There is no danger whatever to people coming to Texas, as our quarantine will amply protect other sections of the state. We hope to be able to give San Antonio a clean bill of health within a few days. The state and federal governments are co-operating at Laredo, and hope to exterminate the infection there soon.

VIRGINIA.

The Seaboard Medical Association of Virginia and North Carolina will meet in Norfolk, December 15, 16 and 17.

Wage War Against Irregulars.—The Norfolk Medical Society, at its meeting, November 10, appointed a committee to investigate charges against illegal practitioners of the city.

Personal.—Dr. W. Armistead Gillis, Petersburg, has received an appointment in the laboratory of the Bureau of Medicine and Surgery, U. S. Navy.——Dr. George Walke Wallace, Norfolk, after a period of ill health, has resumed practice.——Dr. Charles G. Cannaday, Roanoke, has been presented with a gold-headed cane by the exhibitors at the Virginia Medical Society meeting.——Dr. Albert S. Priddy, Marion, has moved to Bristol, Tenn.——Dr. E. C. S. Taliaferro, Achilles, has returned from Europe and is practicing in Norfolk.

WASHINGTON.

Fire Destroys Hospital.—A fire which caused a loss of more than a million dollars at Aberdeen, Wash., destroyed two buildings of the Grays Harbor Hospital.

Physician Injured.—Dr. W. C. Pallister, local surgeon of the Northern Pacific Railway at Kennewick, jumped from a train in motion, and sustained serious contusions and wounds.

Typhoid at Yakima.—The State Board of Health, which has been investigating the typhoid fever situation at North Yakima, reports a deplorable sanitary condition of the city; that about 200 cases of the disease exist in the city and vicinity, and that the death-rate is high.

Still in the Dark Ages.—Colfax is said to be wrestling with the vaccination problem. The State Board of Health has issued an order that all school children be vaccinated. It is reported that many Colfax people resent the order, consider it unconstitutional and are raising funds to make a test case.

WEST VIRGINIA.

Quarantine Lifted.—The smallpox quarantine which closed the Broaddus Institute, Clarksburg, for nearly a month, was

lifted November 4. Two students had smallpox, and two or three others what was called varioloid.

Smallpox Rages.—Kenova and Ceredo have epidemics. In Ceredo there are 50 cases, with 4 deaths. Both towns are quarantined against by Huntington, Catlettsburg and Ashland. From November 2 to November 4, 7 new cases were reported in Kenova, and 12 new cases in Ceredo.

Hospital Opened.—The Davis Memorial Hospital, Elkins, built by the late Henry G. Davis and wife, at a cost of $85,000, as a memorial to their son, who was drowned off the coast of Africa, was opened October 8. Dr. William W. Golden is superintendent and surgeon-in-charge, Dr. M. S. Wilson assistant resident physician, and Drs. William Osler, Thomas S. Cullen, Louis McL. Tiffany, and Frank Martin, Baltimore, are on the consulting staff.

State Board of Health Speaks.—The State Board of Health, after summarizing the smallpox situation in the state, and noting the increase in mortality from 12 to 20 per cent., recommends vaccination and revaccination and the exclusion from school of children who have not been vaccinated or who have not fully recovered from infectious diseases. Superintendents of state institutions are directed to have all inmates and employes vaccinated and to admit persons only with the greatest precautions against infection.

WISCONSIN.

Smallpox in Indians.—Smallpox has broken out among the Winnebago Indians who are in camp near Portage.

All Have Registered.—Every physician in Douglas County has either passed the prescribed examination or has registered.

Loving Cup Presented.—At the recent meeting of the Central Wisconsin Medical Society at Janesville, Dr. Joseph B. Whiting of that city was presented with a silver loving cup by the society.

Opens Sanitarium for Children.—Dr. Mary E. Pogue has opened a sanitarium at Lake Geneva, Wis., for the treatment of children suffering from nervous and mental defects. Supporting Dr. Pogue as a supervisory board are Drs. Daniel R. Brower, Sanger Brown, Archibald Church, W. S. Christopher, H. V. Halbert and William G. Stearns. Kindergarten, medical and corrective gymnastics, the correcting of speech defects, articulation, counting of beads and the less exhausting methods of mathematics, modeling in clay, basket and mat weaving and the control and understanding of self are to be taught, each child receiving individual instruction.

GENERAL.

Southern Medical College Association.—There will be a meeting of this association in the Piedmont Hotel, Atlanta, Ga., December 14, at 10 a. m. All southern medical colleges not already members and which desire to affiliate with this association, are requested by the secretary, G. C. Savage, M.D., 139 N. Spruce Street, Nashville, Tenn., to file application at this meeting.

The Warren Triennial Prize (founded by the late Dr. J. Mason Warren in memory of his father) of $500 will be awarded in 1904 for the best dissertation on some subject in physiology, surgery or pathologic anatomy; the arbitrators being the physicians and surgeons of the Massachusetts General Hospital. A high value will be placed on original work. Competing essays must be legibly written, and suitably bound, so as to be easily handled. The name of the writer must be inclosed in a sealed envelope, on which must be written a motto corresponding with one on the accompanying essay. Any clew given by a dissertation or by a writer which reveals his name before the award of the prize will disqualify him. If no essay is considered worthy, no award will be made. April 14, 1904, is the last day on which manuscripts may be received by Dr. Herbert B. Howard, resident physician, Massachusetts General Hospital, Boston.

CANADA.

British Columbia Examination.—Of the 13 candidates before the examiners of the British Columbia Medical Council this month, 11 were successful.

More Montreal Smallpox.—The Montreal Civil Smallpox Hospital, which has been closed for some time, is again open with 10 patients, all of whom it is asserted came from outside places.

In the Montreal General Hospital, in October, there were admitted to the wards 250; discharged, 229; deaths, 12; average daily sick, 190. There were 2,532 consultations in the outdoor departments. Typhoid fever cases have decreased to 24.

Ottawa Medico-Chirurgical Society Formed.—This society is formed by the union of the two medical societies of Ottawa, and the first meeting occurred November 5. Dr. H. Beaumont Small delivered the presidential address on "Medical Memoirs of Bytown," the old name of Ottawa before it became the capital of the dominion. The society will meet on the first and third Thursdays of each month. Sir James Grant, M.D., is the honorary president.

Personal.—Dr. M. O. Klotz, Ottawa, a graduate of Toronto University, will be appointed governor's fellow in pathology at McGill University.——Dr. J. C. Mitchell, ex-president of the Ontario Medical Association, assistant physician at the Toronto Asylum for the Insane, has been appointed by the Ontario government medical superintendent of the new epileptic hospital now being erected at Woodstock, Ont. Dr. Mitchell has been granted four months' leave of absence to visit similar institutions.

St. John Physicians Arrested for Not Reporting Births.—The law in New Brunswick formerly required the parents, a clergyman or the attending physician to report a birth. On the ground that the physician can better serve the cause of vital statistics, the law was amended so as to make this duty devolve on him. One day last week nearly all of the physicians of St. John appeared in the police court, summoned because of neglect to comply with this law. There being no compensation, the physicians have resented the law and seem not to have obeyed it.

British Columbia Medical Society.—The fourth annual meeting took place at Victoria, October 30 and 31, under the presidency of Dr. O. M. Jones, Victoria. Several physicians were present from the state of Washington, and took a lively part in the discussions. The presidential address dealt chiefly with medical education, deplored the money-making tendency of the modern medical college, and advocated raising the ideal of medical teaching and the maintenance of the noblest ethics of the profession. The following were the officers elected: President, Dr. A. P. Proctor, Kamloops; vice-president, Dr. Boyle, Vancouver; secretary, Dr. B. Jack, Vancouver.

Toronto Has Excellent Water.—A series of bacteriologic analyses of Toronto's drinking water have been made for four months. The highest rate reached was on September 30, when 1,120 colonies were registered per cubic centimeter, but these were mostly water forms, no gas-forming bacilli occurring. The lowest register was on October 24, the number reaching 240. Ten years ago the analysis used to show 20,000. It is thought that this record can not be beaten on this continent. Records have been kept weekly in the health department since 1893. The improvement in the water in the last ten years is due to the steel section of the conduit from the lake having replaced the old wooden one, and to the new settling basin.

Toronto Dispensary for Consumptives To Be Established.—The National Sanitarium Association has announced, with especial approval of the medical profession of Toronto, their intention to establish in Toronto a free dispensary for outdoor consumptive patients. In the same building it is proposed to have a lecture hall for students. The Toronto Free Consumption Hospital, now being erected about five miles away, and which will have accommodation for fifty patients, is almost completed. In connection with this hospital there are about forty acres of land, and the expenditure will reach $25,000, but another $25,000 is to be further spent, and toward this purpose a committee of prominent Toronto citizens are collecting funds.

FOREIGN.

Medical Affairs in Holland.—The present government of Holland is strongly in favor of homeopathy and faith healing, and loses no opportunity to discredit the medical profession. The authorities have even gone so far as to invite to the chair of pharmacognosy and pharmacodynamics at the University of Leyden a certain Mende-Ernst of Zurich, formerly a minister, well known throughout Switzerland as a charlatan and homeopath. The call was made at the instance of the prime minister, under protest from the faculty.

Resignation of Eulenburg.—The *Deutsche Med. Wochenschrift* was founded in 1871 by P. Börner at Berlin, and conducted after his death by S. Gutmann, until the latter died in 1893. Since that year this model medical journal has been in charge of Prof. A. Eulenburg, Geh. Med.-Rath, and of Professor J. Schwalbe. We regret to learn that Eulenburg's other duties have compelled him to sever his connection with

the journal. His resignation is to take effect at the close of the year. He has been one of the pioneers in the closer organization of the medical press in his own country and throughout the world.

The Austrian Trouble.—In Austria the government, through its representatives in parliament, seems to have publicly identified itself with the ignorant enemies of science and progress. Our Austrian exchanges comment with grief on this disgrace to their country. The culmination of the trouble was reached in a discussion of vivisection in the lower Austria Landtag. Several members, including the speaker of the house, accused the members of the medical profession, especially certain world-famous Vienna professors, of experimenting on poor patients and of other obnoxious practices in the line of vivisection. The matter was referred to a committee whose report recommends that all the laboratory animals should be removed from the clinics of the gynecologists Chrobak and Schauta. The dean, Professor Weichselbaum, and the other members of the faculty have publicly protested against this measure and the profession throughout Europe is watching aghast this dark cloud that is obscuring the brilliancy of the famous Vienna school. A public meeting of protest has been held at Vienna by the students and professors, and the medical chamber passed a unanimous resolution that the members of the national health service should resign in a body. The minister of education has tried to conciliate the profession, urging them not to take the words of the speaker of the house too seriously and exaggerate their import. Our Berlin exchanges quote Billroth's complaints of the indifference if not actual enmity of the legislators, even as long ago as 1874, and the conditions have evidently not improved since then. It is only a few weeks ago that the Austrian authorities decreed that cancroin should be tried on an extensive scale in certain Vienna hospitals, as mentioned at the time in this column.

Correspondence.

The Red-Light Treatment of Smallpox.

PHILADELPHIA, Nov. 14, 1903.

To the Editor:—I deem it proper to briefly reply to Dr. Finsen's article on "The Red-Light Treatment of Smallpox," which appeared in the last number of THE JOURNAL.

I wish to make public acknowledgment that I have done Dr. Finsen an injustice in stating that the red-light treatment did not originate with him. A treatment, which in effect was a sort of red-light treatment, was certainly employed by John of Gaddesden, but Dr. Finsen calls attention to the fact that the exclusion of the actinic rays of the sun was not its purpose, and that the red blankets and hangings, in all probability, did not exclude all daylight.

As to the value of the so-called red-light treatment, I am more convinced than ever of its inutility as additional clinical evidence comes to hand. I regret very much that Dr. Finsen did not discuss some of the theoretical objections to his theory. It appears to me that one of the strongest arguments against the correctness of Finsen's view is that the negro, whose skin is protected against the entrance of actinic solar rays by a blackish pigment—a far better barrier than red screens—is just as liable to die from smallpox or to be pitted by the disease as his white neighbor. Dr. Finsen has himself stated that "pigmentation constitutes a defense against the effects of the chemical rays." If his statement is true, and if the negro is not protected (which is an irrefutable fact) then the conclusion is imperative that chemical rays of light have nothing to do with pustulation in smallpox.

In support of his red-light treatment, Finsen quotes the results of treatment of 150 cases of smallpox in northern Europe. How often in the history of medicine have wonderful powers been attributed to therapeutic agents because of apparent clinical results. Rectal injections of hydrogen sulphid, the original tuberculin and a host of once loudly-acclaimed measures and drugs have after a time been lost sight of. Dr. Nelson D. Brayton, Indianapolis, has observed many cases of smallpox treated in red-light wards. He writes: "With an experience of at least 300 cases, I regret that I also must corroborate the results that Dr. Welch and Dr. Schamberg arrived at in Philadelphia, in the two cases in which they tried the red-light treatment of the disease, and say there is nothing in it. While it may sound well in theory and look beautiful in practice, it is nevertheless true that the dead are still removed, and the pitted and scarred still recover in a red-light hospital."

In order that the truth may be arrived at, it is important that negative and unfavorable results, as well as the successful ones, should be brought to public attention.

1636 Walnut Street. JAY F. SCHAMBERG, M.D.

Dose of Carbolic Acid and Dosage in General.

NEW YORK, Nov. 14, 1903.

To the Editor:—In reference to the dose of carbolic acid, I should like to say that I personally know a patient who is taking one-half dram, or 30 minims, of pure liquefied carbolic acid at a dose two or three times a day. He has been taking it for some time, and with apparent great benefit. Of course, he has reached the dose gradually, starting with one or two minim doses. I might take this opportunity to add that our so-called science of posology is in an uncertain, chaotic condition, and that no intelligent physician, who is able to watch and interpret effects, should be hampered by book doses. He need not be afraid of being styled a homeopath, if he thinks he gets good effects from and, therefore, prescribes doses much below the accepted minimum; nor, on the other hand, should he hesitate to order doses much above the dispensatory and dose-book maximum if he thinks such doses are demanded by the exigencies of the case. I have more than once prescribed doses which staggered the druggist—such as one ounce of bismuth subnitrate at a single dose, in gastric ulcer, 1/20 gr. of atropin sulphate in suspected intussusception—but which produced the happiest results on the patient. It would be well if the various board examiners gave a little more latitude to the candidates in the subject of posology. WM. J. ROBINSON, M.D.

The County Society and the Index Medicus.

ELKTON, MD., Oct. 30, 1903.

To the Editor:—The Cecil County (Md.) Medical Society has subscribed to the *Index Medicus*. I have thought that if a good proportion of the county societies would become interested in this matter, and follow the example of this Maryland society, the continued existence of this important journal would be assured. We propose to deposit the numbers in a public place accessible to all our members. I take it that making a universal index of medical literature available to the mass of the profession can not fail to have far-reaching results beyond the demonstration of the ability of organization in creating and sustaining great professional enterprises.

CHARLES M. ELLIS, M.D.

Queries and Minor Notes.

ANONYMOUS COMMUNICATIONS will not be noticed. Queries for this column must be accompanied by the writer's name and address, but the request of the writer not to publish his name will be faithfully observed.

THE HIPPOCRATIC OATH.

WISCONSIN, Nov. 13, 1903.

To the Editor:—Will you kindly give me the form of the oath or obligation that is administered to all graduates in medicine?

D. D.

ANSWER.—Our correspondent probably refers to the Hippocratic Oath, which is as follows:

"I swear by Apollo the physician and Œsculapius and Health, and All-heal and all gods and goddesses, that, according to my ability and judgment, I will keep this Oath, and this stipulation to reckon him who taught me this art equally dear to me as my parents, to share my substance with him, and relieve his necessities if required, to look on his offspring in the same footing as my own brothers and to teach them this art, if they shall wish to learn it, without fee or stipulation, and that by precept, lecture and every other mode of instruction, I will impart a knowledge of the art to my own sons and those of my teachers, and to disciples bound by stipulation and oath, according to the law of medicine, but to none others. I will follow the system of regimen which, according to my ability and judgment, I consider for the benefit of my

patients, and abstain from whatever is deleterious and mischievous. I will give no deadly medicine to anyone if asked, nor suggest any such counsel; and in like manner I will not give to a woman a pessary to produce abortion. With purity and with holiness I will pass my life and practice my art. I will not cut persons laboring under the stone, but will leave this to be done by men who are practitioners of this work. Into whatever houses I enter, I will go into them for the benefit of the sick, and will abstain from every voluntary act of mischief and corruption; and further from the seduction of females or males, of freemen and slaves. Whatever in connection with my professional practice or not in connection with it, I see or hear, in the life of men, which ought not to be spoken of abroad, I will not divulge, as reckoning that all such should be kept secret. While I continue to keep this Oath unviolated, may it be granted to me to enjoy life and the practice of the art respected by all men in all times. But should I trespass and violate this Oath, may the reverse be my lot."

A modified form of this oath was administered this year to graduates in medicine of the Syracuse University; this was published in THE JOURNAL, July 4, 1903. It is not usual to administer any oath in the majority of medical colleges. The graduates are supposed to be instructed as to their ethical obligations and expected to fulfill them.

TREATMENT OF GONORRHEAL ANKYLOSIS OF KNEE.

WEATHERFORD, TEXAS, November, 1903.

To the Editor:—What is your advice in a case of ankylosis of knee from gonorrheal arthritis? (Jan. 11, 1903.) The patient is a young man, aged 23, general health good; he has been up six months, has been at work some two months, has had every means of treatment except surgical, including 30 treatments by dry hot air. The knee is flexed 5 9/16 inches while the patient is lying on a horizontal plane. It is impossible to get any movement in the knee. It swells a little during the day's use.

DR. ROBERT R. NORWOOD.

ANSWER.—If under anesthesia the ankylosis of the knee is found to be bony, nothing can be done, unless the angle of deformity is so great as to warrant an open operation in order to correct this, in which case, of course, the knee would be stiff in its new position. If the adhesions are not bony, but can be broken up under an anesthetic, this should be done. The knee should then be bandaged—not too tightly—with a rubber bandage and enclosed in hot fomentations to relieve the pain and prevent too much swelling. Thereafter the joint should be moved at least once a day, in order that the adhesions may not reform, and the dressing should then be reapplied. This will be very painful, and will require a great deal of perseverance on the part of the surgeon, and of endurance and grit on the part of the patient, to thoroughly carry it out. It will also require several months' treatment.

Marriages.

MYRON L. HUNTINGTON, M.D. to Mrs. Jennie Garrett, both of Moline, Ill., November 5.

M. BOWMAN HOOD, M.D., to Miss Mabel Glyndon Joyner, both of Baltimore, November 4.

JOHN A. BAUER, M.D., to Miss Elizabeth Schlarmann, both of Germantown, Ill., October 28.

RICHARD L. NEER, M.D., Baltimore, to Miss Effie Maude Bennett, at Portland, Ore., November 3.

EMMETT J. CRAIG, M.D., U. S. Army, to Miss Annie Laurie Miller of San Diego, Cal., November 1.

LEONARD C. CHAMBERLAIN, M.D., to Miss Jeannette G. Drysdale, both of New Orleans, La., November 11.

FRANCIS S. FURMAN, M.D., Shreveport, La., to Miss Sarah Chandler, at Johnson City, Tenn., November 4.

VOLNEY McR. SHOWALTER, M.D., Point Clear, Ala., to Miss Charlotte McGraw, at Bradford, Pa., November 3.

FRANK TORNHOLM, M.D., Wahoo, Neb., to Miss Anna Josephine Pierson of South Bend, Ind., October 28.

AUGUST E. KROENING, M.D., Lincoln, Ill., to Miss Nellie Bellmar of Springfield, at Wilmington, Ill., October 28.

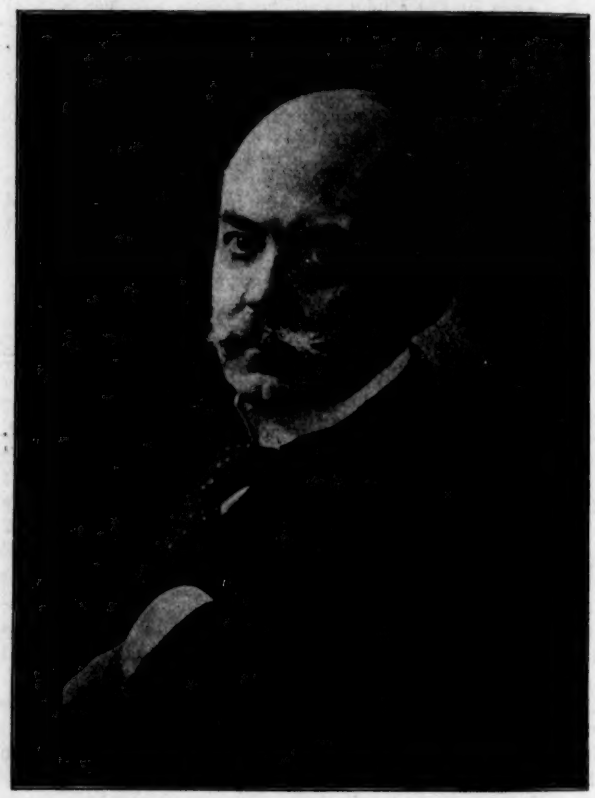
Deaths.

GEORGE JULIUS ENGELMANN, M.D.

George Julius Engelmann, M.D., Boston, died suddenly in Nashua, N. H., November 16, aged 56. While on a brief vacation he caught cold, pneumonia developed rapidly and all treatment was unavailing. He leaves a wife and three children. The burial took place yesterday in St. Louis.

Dr. Engelmann was born in St. Louis, July 2, 1847, and received his early education at Washington University, from which he graduated with the degree of master of arts in 1869. He took a medical course at the universities of Tuebingen, Berlin, where he obtained his medical degree in 1871, and in Vienna, where he obtained a degree of master of obstetrics a year later. He served as surgeon in the Franco-Prussian War and returned to St. Louis in 1873, where he practiced until 1895. His practice was devoted almost exclusively to gynecology and obstetrics. In 1895 he moved to Boston. He was an extensive traveler, and as a recreation made researches in the lines of ethnology and archeology. His collection of Missouri flints and pottery, which is now in the Peabody Archeological Museum in Cambridge, Mass., is justly renowned. He was a member of the American Medical Association, president of the American Gynecological Society in 1894-5, honorary president in 1884, and president in 1900 of the Gynecological Section of the International Medical Congress, honorary president of the International Congress of Obstetrics and Gynecology in Brussels, 1892, and in Amsterdam, 1899. He was president of the Boston Obstetrical Society, and a fellow of the British Gynecological and London Obstetrical societies.

He was professor of the diseases of women in the Missouri Medical College, St. Louis, and in the Post-Graduate School of Medicine in that city. He was a strong and forceful writer and chief among his contributions to literature are his works on "Mucous Membrane of the Uterus," published in 1875, on "Labor Among Primitive Peoples," 1882, which passed through two editions in English and was translated into French and German, and monographs in the line of his specialties.



GEORGE JULIUS ENGELMANN, M.D.

Lucius Gillette Thompson, M.D. Starling Medical College, Columbus, Ohio, 1849, one of the founders of the Illinois State Medical Society, and first vice-president of the North Central Illinois Medical Association, died at his home in Lacon, Ill., October 30. In company with the late Dr. Robert Boal he drove from Lacon to Springfield in June, 1850, in response to a call for a state medical convention issued by the Ottawa Medico-Chirurgical Association. At this meeting 16 physicians were present, and the state society was organized. At its semi-centennial in 1900 Drs. Boal and Thompson were the sole survivors of those who organized the society.

Henry A. Clarke, M.D. Rush Medical College, Chicago, 1875, died suddenly at his home in Pueblo, Colo., October 18. At a meeting of the Pueblo County Medical Society, October 20, resolutions testifying to the worth of Dr. Clarke were adopted.

August C. Sapper, M.D. Missouri Medical College, St. Louis, 1893, chief of the medical staff of the Lutheran Hospital, St. Louis, died in that institution, November 8, from malignant disease, after an illness of five months, aged 35.

J. McFadden Gaston, M.D.—As we go to press we learn that Dr. J. McFadden Gaston, the noted surgeon of Atlanta, Ga., died at his home November 15, aged 79. An extended notice will appear in the next issue of THE JOURNAL.

William Wallace Seely, M.D. Medical College of Ohio, Cincinnati, 1864, professor of clinical ophthalmology and otology in the Medical College of Ohio, died at his home in Cincinnati, November 8, after a long illness, aged 66.

Emil Rosenberg, M.D. University of Berlin, Germany, 1855, senior medical examiner of the Northwestern Mutual Life Insurance Company, died at his home in New York City, November 4, aged 74.

Noah D. Jenkins, M.D. College of Physicians and Surgeons, Keokuk, Iowa, 1886, died at his home in Mark, Iowa, November 5, from the effects of the excessive use of liquor and drugs, aged 55.

E. C. Walters, M.D. Jefferson Medical College, Philadelphia, was found dead in his office in Washington, Pa., November 5, aged 35. Death is supposed to have been due to alcoholism.

Franklin von Artsdalen, M.D. Jefferson Medical College, Philadelphia, 1857, died at his home in Philadelphia, November 15, from kidney disease of long standing, aged 69.

Benjamin A. Andreas, M.D. Jefferson Medical College, Philadelphia, 1888, died suddenly at his home in South Bethlehem, Pa., October 26, from heart disease, aged 43.

Augustus Remick, M.D. Harvard University Medical School, Boston, 1868, a member of the American Medical Association, died in Providence, R. I., October 5, aged 64.

John Craig Nevins, M.D. Jefferson Medical College, Philadelphia, 1874, died at his home in Summit Hill, Pa., October 26, after an illness of nine months, aged 64.

Benjamin F. Sheeder, M.D. Jefferson Medical College, Philadelphia, 1893, died recently at his home in Saline, Mich., after an illness of two years from paralysis.

Nathaniel Jewett, M.D. Eclectic Medical College of the City of New York, 1871, died at his home in Ashburnham, Mass., November 3, after a long illness.

Morgan Clements, M.D. Jefferson Medical College, Philadelphia, 1848, died at his home near Tuscaloosa, Ala., November 1, after a short illness, aged 78.

James R. Sims, M.D. Eclectic Medical Institute, Cincinnati, 1883, Memphis Hospital Medical College, 1889, of Du Quoin, Ill., died October 11.

William R. Jenkins, M.D., of Freeman, Mo., died at the University Hospital, Kansas City, Mo., October 28, from cystitis, aged 48.

Samuel Henry Warren, M.D. University of Buffalo, 1880, of Buffalo, died from alcoholism at Riverside Hospital, Buffalo, October 29.

Louisa May Shryock, M.D. University of Wooster, Cleveland, 1893, of Butler, Pa., died at North Washington, Pa., November 3, aged 36.

David A. Pease, M.D. Cincinnati Medical College, died at his home in Twin Bridges, Mont., November 3, from heart disease, aged 72.

William H. H. Jackson, M.D. Cleveland Medical College, 1868, died suddenly at his home in Oil City, Pa., October 31, aged 63.

John Herbert Trout, M.D., Canada, of Toronto, Ont., died at Dubuque, Iowa, November 1, after a long illness, aged 29.

George Tallmadge Brown, M.D. New York University, 1879, died at his home in Margarettsville, N. Y., October 30.

Horace E. Jones, M.D. Barnes Medical College, St. Louis, 1899, of Thompsonville, Ill., died October 16.

Frank Judson, M.D., 1891, died at Dixon, Ill., October 28, after a surgical operation, aged 36.

Marcus L. Schlesinger, M.D. University of Moscow, Russia, 1889, of Chicago, died October 7.

Herman Rakenius, M.D. Rush Medical College, Chicago, 1878, of Chicago, died recently.

Adelia Barlow Diven, M.D., 1877, died at her home in Chicago, November 7, aged 59.

Franklin Hollen, M.D., 1878, of Clay County, Ill., died October 14.

Bennett F. Hopkins, M.D., 1893, of Rapatee, Ill., died recently.

Marcus L. Brown, M.D., 1877, of Enfield, Ill., died October 13.

James C. Scott, M.D., 1887, of Waynesville, Ill., died recently.

Edward R. Roe, M.D., 1881, of Chicago, died in October.

A. M. Ross, M.D., 1892, of Argenta, Ill., died recently.

Miscellany.

Improvement in Vital Statistics.—Effective co-operation has been instituted between the American Medical Association, the American Public Health Association, the Conference of State Boards of Health, the United States Census Bureau and the United States Public Health and Marine-Hospital Service for the improvement of the vital statistics of this country. Among the objects sought are the extension of adequate methods of registration, the use of uniform and comparable tables and rates in bulletins and reports and the improvement of the international classification of causes of death. A pamphlet on "Statistical Treatment of Causes of Death" has been issued by the United States Census Bureau, requests for which should be addressed to Mr. W. A. King, chief statistician for vital statistics, Census Bureau. It has special reference to the difficulties encountered in compiling deaths returned from several causes, and asks for the co-operation of the profession in framing a thoroughly satisfactory method of procedure in such cases.

Improved Local Antitoxin Treatment of Tetanus.—J. A. Sicard of Paris was the first to administer tetanus antitoxin by the lumbar subarachnoid route, and besides the 20 cases published by Vallas last year he knows of 6 cases thus successfully treated (2 personally observed), with another which terminated fatally. Experimental research has also established the possibility of curing even severe tetanus by subarachnoid injection of the antitoxin. Two dogs were saved in this way, while by the other routes none were saved in severe infection. Marie and Morax have recently announced that tetanus toxin besides being carried to the brain by the blood, may reach it by way of the peripheral nerves. The impregnation must occur by way of the cylinder-axis, as the cerebrospinal fluid does not become toxic even after subcutaneous injection of large amounts of the toxin. The cylinder-axis conveys the toxin just as it conveys in the opposite direction the trophic current. It is thus able to convey a toxin, a soluble ferment, but not microbian elements. The fact that the tetanus symptoms commence with trismus in man and in the injured limb in inoculated animals is proof of the correctness of this assumption. The peripheral nerves absorb the tetanus toxin from the lymph spaces around and transmit it to the brain as a plant takes up the water from the soil. Sicard applied these new data to the treatment of the disease in his 2 last cases mentioned above, supplementing the subarachnoid injection of the antitoxin by injections, not only at the point of the injury but along the nerve trunks—an amplified form of local treatment. By these *injections para-nerveuses périphériques*, as he calls them, he follows the toxin along its route. Both his patients thus treated promptly recovered. He advises 5 to 10 c.c. of the antitoxin injected around the wound; then 15 to 20 c.c. injected along the peripheral nerves, both the large and the medium, especially in the wounded limb, and the same amount injected into the subarachnoid space. Forty-eight hours later the injections may be repeated with the same doses, and again if needed, but the subarachnoid injections should not be repeated more than once.

A Roman Catholic's View of the Medical Profession.—In the *Ecclesiastical Review* for September is a chapter from the serial "In Father Martin's Library," from which we quote the following conversation: "'The ethics taught in our medical schools are in some respects admirable, and, perhaps, superior to those of any other learned profession. They inculcate a delicate regard for personal feelings, a vigorous exclusion of purely mercenary methods, the duty of safeguarding the interests of a patient, the keeping of secrets, and the maintenance of a recognized professional etiquette, not only toward brother physicians, but toward the ministers of religion. In-

deed, I have often thought that the readiness with which the average physician holds himself bound to answer a call to duty at the sick-bed or in emergency cases, even when it demands of him personal sacrifice out of all proportion to the remuneration held out, might serve us priests as a model when we are called by our poor people to administer to them the comforts of religion, which they covet even more than bodily relief or health.' 'I should suppose that a physician's reputation, and consequently his practice, depend on such conduct,' I said tentatively. 'Assuredly. But there are other motives that operate in most cases, and which indicate a naturally more sensitive or compassionate—I should say, perhaps, religious—disposition of mind. In the first place, the very attraction that leads a man to take up the profession of medicine betokens ordinarily a sympathetic nature. It is true that the methods of the dissecting room tend to brutalize a disposition naturally coarse or reckless; but for this the actual suffering which subsequent experience reveals to the practitioner in a thousand different forms of light and shade, furnish a strong antidote. No man, unless it be the priest who has to administer to a large community of needy souls, sees so much of the inner workings of human life, the true and false, as does the physician; and, if his mind be open, it can not but arouse in him motives which tend toward the real, the permanent, as opposed to the unrealities of our temporary existence. And this I hold to be the preamble to religion, as much as reflection is a condition of all spiritual consciousness and activity, etc., etc.!'"

Book Notices.

THE PRACTICAL MEDICINE SERIES OF YEAR BOOKS. Comprising Ten Volumes on the Year's Progress in Medicine and Surgery. Issued Monthly. Under the General Editorial Charge of Gustavus P. Head, M.D., Professor of Laryngology and Rhinology, Chicago Post Graduate Medical School. Vol. VIII. Materia Medica and Therapeutics, Preventive Medicine, Climatology, Suggestive Therapeutics, Forensic Medicine. Edited by George F. Butler, Ph.G., M.D.; Henry B. Favill, A.B., M.D.; Norman Bridge, A.M., M.D.; Daniel R. Brower, M.D., and Harold N. Moyer, M.D. July, 1903. Vol. IX. Physiology, Pathology, Bacteriology, Anatomy, Dictionary. Edited by W. A. Evans, M.S., M.D.; Adolph Gehrmann, M.D., and William Healy, A.B., M.D. August, 1903. Vol. X. Skin and Venereal Diseases, Nervous and Mental Diseases. Edited by W. L. Baum, M.D., and Hugh T. Patrick, M.D. September, 1903. Cloth. Pp. 326, 233 and 236 Respectively. Price, $1.50 and $1.25 Respectively. Chicago: The Year-Book Publishers.

In the July number of this series we have "Materia Medica and Therapeutics" by Dr. George F. Butler, who reviews the literature very thoroughly. A useful portion of the work is a list of the new proprietary remedies taken from *Merck's Archives*. "Preventive Medicine" is ably treated by Dr. Favill, and "Climatology, Suggestive Therapeutics and Forensic Medicine" by such well-known writers as Drs. Norman Bridge, Brower and Moyer. In the August issue we have the subjects of "Pathology" by Dr. W. A. Evans and "Physiology, Bacteriology and Hygiene" by Dr. Gehrmann. In conclusion a supplement to the medical dictionaries, containing the new medical terms, is furnished by Dr. William Healy. The usefulness of this last addition is apparent. In the September number Dr. W. L. Baum reviews the literature of skin and venereal diseases. This part of the work is well illustrated. Nervous diseases are treated of by Dr. H. T. Patrick, assisted by Dr. Charles L. Mix, who give the gist of what is new in this subject within the past year. The contribution to the subject of mental diseases is rather brief. This portion of the work does not fully represent all the valuable literature that has appeared on this subject within the period covered. As a whole the volumes fully bear out the reputation of the preceding ones. The series is a most valuable one and unique in its convenience and inexpensiveness.

THE MEDICAL ANNALS OF MARYLAND. 1799-1899. Prepared for the Centennial of the Medical and Chirurgical Faculty. By Eugene F. Cordell, M.D., Baltimore. 1903. Cloth. Pp. 888. Baltimore: Williams & Wilkins Co. 1903.

There are few commonwealths that have had the opportunity to have their medical history so well compiled as Dr. Cordell has done in this work for Maryland. It gives a valuable résumé of the principal facts as regards medical practice and medical history in the state during the nineteenth century. It is divided into three sections, the historical, the biographical and the chronological. The first gives the annals of the medico-chirurgical faculty—the state society—during its century of existence, with some notices of earlier organizations in the state. The second gives a brief biographic note of each member of the society so far as the records show from the beginning, making a total of about 2,400 persons. In the last section there is an account of the principal medical facts occurring in each year, and especially biographical notices of leading members of the profession in the state. The numerous portraits which embellish the text are a very valuable addition to the work and have evidently been carefully collected from the best available sources. It is something to know how our predecessors looked and the longer the time that has elapsed the more interest we have in them. The book is elegantly printed on excellent paper, its text is admirable and the industry and good judgment of the compiler are worthy of all praise.

ANALYSIS OF THE SEXUAL IMPULSE—LOVE AND PAIN—THE SEXUAL IMPULSE IN WOMEN. Third Volume in Series, "Studies in the Psychology of Sex." By Havelock Ellis, L.S.A. (England); Fellow of the Medicolegal Society of New York and Anthropological Society of Berlin. Cloth. Pp. 266. Price, $2.00 net. Philadelphia: F. A. Davis Company.

This is another volume in the series discussing sexual matters and is perhaps the most valuable one that has yet appeared. It treats of the fundamental principles and gives especial attention to an analysis of the sexual impulse in women. The many diseases and conditions in which the influence of sexual desire and gratification is sometimes discovered after having been ignored suggest the value of this book to the physician, especially to the neurologist. With his enthusiasm in and familiarity with the subject, Ellis goes into details that seem unnecessary and unpleasant—a criticism that would not be needed if the work were only placed in the hands of specialists.

THE NEUROLOGICAL PRACTICE OF MEDICINE. A Cursory Course of Selected Lectures in Neurology, Neuriatry, Psychology and Psychiatry. Applicable to General and Special Practice. With 177 Illustrations. After the Author's Class-Room Methods as a Teacher of Students. Designed for Students and General Practitioners of Medicine and Surgery. By Charles H. Hughes, M.D., President of the Faculty and Professor of Neurology, Psychiatry and Electrotherapy, Barnes Medical College. Cloth. Pp. 417. Price, $3.00. St. Louis: Hughes & Co.

Dr. Hughes has published in this volume the first series of his lectures on neurology given in the Barnes Medical College. The book contains a useful demonstration of the neuron theory, the methods of examination in nervous diseases and the general anatomy of the nervous centers, touching also on some pathologic points. The lecture style is clear and the subject-matter is given in an interesting as well as an instructive manner. The work is amply illustrated, not overloaded with technical matter and for that reason is so much better for the student, while at the same time it successfully conveys the instruction that it is intended to give.

PHYSICAL DIAGNOSIS OF DISEASES OF THE CHEST. By Richard C. Cabot, M.D., Physician to the Out-patients, Massachusetts General Hospital. Second Revised Edition. With 147 Illustrations. Cloth. Pp. 319. Price, $2.50 net. New York: Wm. Wood & Co. 1903.

Cabot's excellent work on diagnosis of diseases of the chest has won for itself a favorable place, and this edition will be welcome. For a convenient short manual on the subject we do not known of any work that is its superior. The present issue is beautifully gotten up and amply illustrated.

Association News.

AMERICAN MEDICAL ASSOCIATION.

Proceedings in the Section on Materia Medica, Pharmacy and Therapeutics, at the Fifty-fourth Annual Session at New Orleans.

Dosage of Liquid Medicines.

The following is the report of the Committee on Dosage of Liquid Medicines and the action taken thereon, as reported in THE JOURNAL, May 23, 1903, page 1455:

To the Section on Materia Medica, Pharmacy and Therapeutics of the American Medical Association:

Your committee, appointed at the last session of this Section to consider the recommendations contained in the paper entitled "Dosage of Liquid Medicines: a Simple Plan for Greater Accuracy and Metric Measurements," communicated by Carl S. N. Hallberg, Chicago, respectfully reports as follows:

That, after giving the subject due consideration, they find that Professor Hallberg's criticism on the common methods of designating dosage of liquid medicines is well founded and just, and that the remedy he suggests to overcome the present indefiniteness and uncertainty, namely, the adoption of a standard pipette for dropping doses, and standard metric equivalents for the teaspoon and tablespoon, will be likely to overcome these evils to a great degree, and will favor uniformity and accuracy in the administration of this class of pharmaceutic preparations.

That we recognize the fact that the metric equivalent of the modern teaspoon averages five cubic centimeters, and the tablespoon fifteen cubic centimeters, and would suggest that this fact shall be borne in mind by physicians in ordering doses of liquid medicines. The Philadelphia College of Pharmacy last year adopted the following resolution: "The use of properly made and accurately graduated glass dose measures is to be commended. These measures, however, are to be so constructed that the height of the contained liquid at a spoonful mark is greater than its diameter." Approving this recommendation, the committee has devised a graduated measure for domestic use, which it believes has especial advantages over the usual form of measuring glass. Externally, it is cylindrical; internally, it is cylindrical down to the 15 c.c. mark, and below this point it is an inverted cone. A slight projection or ridge on the inner surface indicates the level for 5 c.c., and another at the base of the inverted cone indicates the lever for the 15 c.c. measure. The total capacity is 30 c.c. This is believed to be a convenient size and sufficiently large for the ordinary administration of liquid medicines, corresponding with one teaspoonful, one and two tablespoonfuls.

The committee also recommends the adoption of a standard medicine dropper or pipette, of 3 millimeters external diameter, which will deliver twenty drops of water, at 15 degrees C., which will measure 1 cubic centimeter when dropped at the rate of one per second, for the administration of doses less than the teaspoonful.

Your committee does not approve the suggestion to alter the values of some of the denominations of customary weights and measures, believing that such action might tend to confuse the subject rather than to facilitate the introduction of the metric method, which is the end desired.

[The report concluded with resolutions which were recommended for adoption by the Section. They are given below as finally adopted.]

FRANK WOODBURY,
AUGUSTUS A. ESHNER,
HORATIO C. WOOD, JR.,
Committee.

On motion the resolutions were adopted as follows:

To the House of Delegates: The following resolutions have been adopted by the Section on Materia Medica, Pharmacy and Therapeutics, and the delegate from that Section instructed to present them to the House of Delegates, with the recommendation that they be adopted by the Association:

Resolved, That teachers of medicine and pharmacy, editors of medical and pharmaceutic journals and authors of text-books are respectfully requested to give precedence to the metric method in the writing of all medical formulas and that, for the administration of doses of less than a teaspoonful, the quantity be stated in drops delivered from a standard medicine dropper or pipette of three millimeters external diameter, which will deliver twenty drops of water at 15 C., which will measure one cubic centimeter when dropped at the rate of one per second, and that the teaspoonful be considered as equivalent to five cubic centimeters and that the tablespoonful be considered as equivalent to fifteen centimeters; and

Resolved, That the orthography, abbreviation, etc., of the International Bureau, or as revised by the National Bureau of Standards at Washington, shall also be recommended for adoption in medical and pharmaceutic publications; and

Resolved, That a copy of these resolutions be transmitted to the Committee of Revision of the United States Pharmacopeia for 1900, with the request that they be incorporated, as far as possible, in the United States Pharmacopeia.

Nerve Nostrums and Drug Addictions.

The following is the report of the Committee on Nerve Nostrums and Drug Addictions and the action taken thereon, as reported in THE JOURNAL, May 23, 1903, page 1455:

The use of proprietary medicines, and especially the so-called nerve tonics and nerve sedatives, has rapidly increased in the past few years, and there seems no likelihood of their decrease unless some systematic plan is made to check this rapidly growing evil. The medical profession owes it to itself and to humanity to take a decided stand on the subject. While we are unable to get rid of the charlatan and faker, while we have motes in our own eyes, it devolves on us as teachers of hygiene to so educate the public that the nostrum business will be reduced to a minimum.

While the profession as a whole is opposed to nostrums, no organized plan to expose their fraudulent claims has yet been made. A few good papers have appeared sporadically in certain medical journals. Evidently the profession has thought that fads and fakers would die out if left alone with "their rope," but such is not the case.

The advertising media of proprietary medicines are: The physician's use of them, the religious press, the lay press, and their own printing presses. Nine of the most widely-read influential religious papers published by the Methodists began the new year by dropping the patent medicine ads. Even the lay press has begun to feel the hand of progress and civilization. Several of the leading newspapers in the east, in Philadelphia, New York and Boston, do not print objectionable medical advertisements.

Dr. Spratling has well said that the quack's secrecy is his only stock in trade; dispel the mystery surrounding him and he will disappear like mist before the rising sun. The term "patent" applied to these medicines is a fraud, pure and simple, because if they were patented their composition would be known and the "valuable discovery" would be free to the public when the patent ran out, as in the case of Castoria. Instead, they are kept secret, and are given protection and a perpetual monopoly on their names through the copyright and trade-mark laws. Some modification of these laws is a necessity.

LEGISLATION BY CONGRESS.

The opportunity is now with us to go before Congress and ask that body to regulate the interstate commerce in proprietary medicines. Such a law would be easier to pass than to break through the state legislature, which is controlled by country newspapers, whose very existence generally depends on the money paid for the advertisements, many of which are unfit to be read in any home in any civilized land. Such a measure should require that the formulas of all proprietary medicines be registered with some department of the Federal government, for instance, the recently established drug laboratory at Washington, and that the sale of all medicines containing any dangerous substances or habit-forming drugs be prohibited unless an exact and correct formula of the ingredients and their quantities be attached to the bottle.

DRUG ADDICTIONS.

With reference to the uses of hypnotics and analgesics and resultant drug addictions, we would recommend that the patient should never be advised of the character of the medicinal agent employed, that every precaution should be taken against such information as may lead to self-medication and its sequelæ of drug habits.

The addiction to drugs that enslave is too often caused by carelessness on the part of the physician giving verbal directions to the patient to take "so and so," or by informing him that he will give him something which will quickly afford relief from some acute pain, etc. The custom of prescribing some of these preparations in the original package, thus familiarizing patrons with the name and properties of

these medicines, is also a dangerous practice, leading to self-medication, and should not be countenanced by reputable physicians. Many of these preparations "prepared solely for physicians' use," are now sold as regular "patent medicines," even at cut rates in department stores. And let it be said to the shame of the medical profession that nearly a score of such medicines are advertised in medical journals, thus giving them a quasi endorsement.

LACK OF SCIENTIFIC NOMENCLATURE.

More general information concerning the Pharmacopeia and its unofficial supplement, the National Formulary, would lessen the necessity of resorting to unofficial preparations. The multiplication of these articles, with their often arbitrarily selected copyright titles, confuses the physician and is the bane of the pharmacist's existence. Sometimes the names of entirely different preparations are so similar as to invite error and serious consequences as a result. Even the true synthetic chemicals are open to this serious objection, while the many mixtures masquerading as definite chemical compounds under suggestive therapeutic terms simply make confusion worse confounded. Owing to their being protected often by patent on the product itself, as well as by patent on the process, in addition to a copyright on the trade name, their status is so questionable as to prevent their admission to the U. S. Pharmacopeia, and the medical and pharmaceutical professions are without adequate knowledge as to their identity, purity and strength. Valuable additions to the materia medica are thus submerged by the irresistible flood of nostrums until the physician is at sea and the pharmacist in despair.

Many schemes for segregation have been proposed, the plan pursued in France having received the most favor, as noticed at various times in the journals. There being here no official body corresponding to the French Academy of Medicine, it has been suggested that such committee might be formed from the American Medical Association and the American Pharmaceutical Association.

THE NATIONAL BUREAU OF MEDICINES AND FOODS.

There is about to be organized the National Bureau of Medicines and Foods, the object of which is to undertake work of this character. The bureau proposes to examine medicinal articles and foods, and certify to such as conform to the standard professed by the manufacturer and to be required by the bureau, for the information of the medical and pharmaceutical professions.

In conclusion your committee recommends:

1. That newspapers which do not print objectionable medical advertisements are entitled to and should receive the favor and preference of medical men.
2. That articles on the dangers arising from the use of quack nostrums should be written for such newspapers for publication.
3. That the Committee on National Legislation be asked to consider the feasibility of the introduction in the next House of Representatives an interstate measure prohibiting or limiting the sale of poisonous and dangerous patent medicines.
4. That no medicinal preparation for internal use, as distinguished from antiseptics, disinfectants, cosmetics and dietetics, advertised as a remedy or cure to the laity, is entitled to the patronage of physicians, nor should such be admitted to the pages of the medical journals, nor to the exhibitions of the American Medical Association.
5. That manufacturers be requested to print the scientific or chemical names under the trade names of all pharmaceutical or chemical preparations.
6. That the general plan and object of the National Bureau of Medicines and Foods are entitled to a further careful investigation by a special committee of the American Medical Association.

WM. J. ROBINSON, New York.
A. W. BAER, Chicago.
H. C. WOOD, JR., Philadelphia.

On motion these recommendations were adopted.

State Boards of Registration.

COMING EXAMINATIONS.

Board of Medical Examiners of the State of California, City Hall, San Francisco, Dec. 1. Secretary, Geo. G. Gere, M.D., 823 Market St., San Francisco.

New Mexico Board of Health, Santa Fe, Dec. 7. Secretary, Dr. D. B. Black, Las Vegas.

Examining Board of Medical Society of Delaware, Dover, Dec. 8. Secretary, Dr. P. W. Tomlinson, Wilmington.

Board of the Homeopathic Medical Society of Delaware State and Peninsula, Wilmington, Dec. 8.

Ohio State Board of Medical Registration and Examination, Columbus, Dec. 8, 9 and 10. Secretary, Dr. Frank Winders, Columbus.

Missouri State Board of Health, Southern Hotel, St. Louis, Dec. 14, 15 and 16. Secretary, Dr. W. F. Morrow, Kansas City.

Medical Council, Philadelphia, Dec. 15. Secretary, Dr. Isaac B. Brown, Harrisburg.

Medical Examining Board of Virginia, Lynchburg, Dec. 15-18. Secretary, Dr. R. S. Martin, Stuart.

Colorado State Board of Medical Examiners, 1723 Tremont St., Denver, Dec. 22, 23 and 24. Secretary, Dr. S. D. Van Meter, Denver.

The Confederation of Reciprocating Licensing Boards.—Dr. B. D. Harison, secretary of the American Confederation of Reciprocating Examining and Licensing Medical Boards, calls our attention to some errors and omissions in the report of the meeting of this confederation at St. Louis, October 27, which appeared in THE JOURNAL, November 7, page 1156. He says that four states were represented which we did not mention, namely: Ohio, Pennsylvania, Nebraska and Oklahoma. In our report we mentioned the obstacles to reciprocity. Dr. Harrison states that obstacles in the way of practical reciprocity were not discussed at the meeting except by inference; that it was declared by those states reciprocating under qualifications 1 and 2 that experience in exchanging certificates under these qualifications demonstrated the fact that there were no such obstacles as stated in THE JOURNAL report. "After several months' experience in exchanging certificates," Dr. Harison says, "under both qualifications 1 and 2 the obstacles reported in THE JOURNAL'S report have been demonstrated beyond any question or doubt to have no material existence." Dr. Harison says concerning the discussion on qualification 2 that the change made had no reference to the diploma, but added the requirements of a year's reputable practice in the state subsequent to the receiving of a license before endorsement could be had for a reciprocal license in another state. Qualification 2 as amended reads as follows:

That a certificate of registration or license issued by the proper board of any state may be accepted as evidence of qualification for reciprocal registration in any other state, provided the holder of such state certificate had been engaged in reputable practice in such state at least one year, and also provided that the holder thereof was at the time of such registration the legal possessor of a diploma issued by a medical college in good standing in the state in which reciprocal registration is sought, and that the date of such diploma was prior to the legal requirement of the examination test in such state.

Dr. Harison further says that the St. Louis meeting was without question the most successful and fruitful reciprocating conference ever held in the United States and that the confederation gained an actual increase of membership of over 66 per cent. and that a greater increase is more than probable within a brief period.

California Report.—Dr. George G. Gere, secretary of the Board of Medical Examiners of the State of California, reports in detail the written examinations held at San Francisco and Los Angeles, July 7 to 9 and August 4 to 6, 1903. The percentage required was 75, there were 9 subjects, 90 questions, and 158 candidates; of the latter, 108 passed and 50 failed, including 14 who were conditioned because of deficiency in certain branches, and who will be required only to take re-

COLLEGE.	No. Passed.	No. Failed.	Max. Grade.	Min. Grade.	Average of Those Who Passed.	Average of Those Who Failed.
Cooper Medical College.....	27	5	91.3	72.2	81.9	77.8
Univ. of Southern California..	19	0	89.1	75.1	81.7	.....
University of California.....	13	2	87.8	72.4	81.6	74.4
Coll. of P. and S., California.	13	7	89.2	70.3	81.5	76.1
California Med. College (E.)..	0	2	80.3	74.0	.....	77.1
Johns Hopkins University....	2	0	94.2	91.0	92.6	.....
Rush Medical College.....	3	‡3	84.5	71.5	82.2	69.6
Northwestern University	2	1	87.3	60.8	85.8	60.8
College of P. and S., Chicago.	2	2	75.3	72.7	75.1	73.0
Hahnemann M. C., Chicago..	2	2	83.5	73.5	82.1	75.1
University of Michigan.....	1	‡3	80.5	61.1	80.5	67.3
University of Louisville.....	0	‡3	77.4	53.3	.....	67.8
Bowdoin Med. College, Maine.	1	2	77.1	71.6	75.0	74.3
Saginaw Valley M. C., Mich..	1	1	77.2	66.2	77.2	66.2
Bellevue Med. Coll., New York	1	1	80.5	*44.7	80.5	44.7
University of Pennsylvania...	1	1	85.5	74.1	80.4	74.1
Columbia Univ., New York...	2	0	88.7	†83.3	86.0	.....

* Graduate 1889. † Graduate 1884. ‡ See dates of graduation below.

examination in those particular branches. By including in the summary those who were conditioned with those who failed, the average failing grades are raised, for example, some were conditioned in spite of average grades of 85 and 80. The year of graduation is recent (1900 to 1903), unless otherwise specified; we call attention to the many graduates of the years 1864 to 1890.

GRADES IN DETAIL.

Cooper Medical College—Passed: 91.3, 86.6 (2), 85.7, 85.1 (2), 84.2, 84.1, 84, 83.4, 83.2, 82.8, 82.5, 81.8, 81.7 (2), 80.8, 80.7, 80.3, 80.1, 79.7, 79, 77.7, 77.2, 76.4, 75.1, 75. Failed: 80.4, 79.5, 79.3, 77.6, 72.2. (Those marked 75 or above were conditioned; those below failed entirely.)

University of Southern California—Passed: 89.1, 88.6, 84.6, 84.5, 84.3, 83.4, 83, 82.6, 81.7, 80.4, 79.8 (2), 79.7, 79.6 (2), 79.5, 79.2, 78.1, 75.1.

College of Physicians and Surgeons, California—Passed: 89.2, 87.4, 84.7, 84.4, 84.2, 83.3, 82.7, 81.7, 78.4 (2), 75.5, 75.4, 75. Failed: 85.1, 79.4, 76.6, 74.1 (2), 73.2, 70.3.

University of California—Passed: 87.8, 86.4, 84.7, 84.4, 83.5, 83.1, 81.3, 80, 79, 78.2, 78.1, 77.7, 77.6. Failed: 76.5, 72.4.

Rush Medical College—Passed: 84.5, 83.1 (graduate 1893), 79.1 (1869). Failed: 73.8, 71.5 (1881), 63.5.

Northwestern University—Passed: 87.3, 84.3. Failed: 60.8 (1869).

College of Physicians and Surgeons, Chicago—Passed: 75.3, 75 (1890). Failed: 73.4, 72.7.

Hahnemann Medical College, Chicago—Passed: 83.5, 80.7. Failed: 76.7, 73.5 (1891).

University of Michigan—Passed: 80.5 (1868). Failed. 71.7 (1890), 69.3 (1864), 61.1 (1882).

University of Louisville—Failed: 77.4 (1875), 72.8 (1892), 53.3 (1887).

Bowdoin Medical College—Passed: 75 (1893). Failed: 77.1 (1892), 71.6.

University of Pennsylvania—Passed: 85.5, 75.3 (1891). Failed: 74.1 (1884).

Colleges having but one representative were as follows:

PASSED.

College.	Year Grad.	Grade.
University of Berlin, Germany	1901	76.3
Pulte Medical College, Ohio	1903	75.1
Yale University	1898	81.5
University of Minnesota	1902	80.7
Western Reserve University, Ohio	1900	83.6
Baltimore Medical School	1902	82.8
Harvard University	1901	87.1
Medical College of South Carolina	1884	80.3
University of Colorado	1897	79.8
Washington University, St. Louis	1900	79.6
Jefferson Medical College, Philadelphia	1875	75.2
Kentucky School of Medicine	1885	79.7
University of Buffalo	1899	80.7
Barnes Medical College, St. Louis	1897	80.7
University of Niagara	1898	77.8
Creighton Medical College, Omaha	1900	78.5
University of Georgetown, D. C.	1902	77.2

FAILED.

Vanderbilt University, Tennessee	1903	76.3
New York University Medical College	1896	66.1
New York Homeopathic Medical College	1903	76.4
Apothecaries' Hall, Ireland	1899	75.3
University of Basle, Switzerland	1902	73.1
Tufts Medical College, Boston	1901	71.2
Laval University, Montreal	1901	69.6
University of Vienna, Austria	1891	74.0
Detroit Medical College	1897	61.6
Chicago Homeopathic Medical College	1879	65.2
Hahnemann Medical College, California	1901	71.3
University of the City of New York	1886	71.7
University of Iowa	1883	70.5
McGill University	1875	73.1

The questions asked were as follows:

MATERIA MEDICA (AUGUST).

1. What is meant by rational therapeutics? Empirical therapeutics? 2. Name three drugs that increase the amount of urine by raising the general blood pressure. Three that increase the quantity by acting locally on the kidney. 3. Name five drugs that are liable to cause an eruption on the skin when given in large doses. 4. Give five drugs that are supposed to have an antiseptic action on the intestinal tract. 5. Name a drug that has a physiologic action practically antagonistic to each of the following: Aconite, chloral-hydrate, morphin. 6. Name a drug that has a physiologic action practically synergetic with the above. 7. What is the composition of Blaud's pills? 8. Write a prescription for chronic constipation such as is commonly met with in patients of sedentary habits. 9. Name and give dose of two drugs that, administered three times a day for several days, might have a cumulative action. 10. What is the physiologic action of ergot on involuntary muscle? Nitroglycerin on peripheral blood vessels? Strychnia on the nervous system?

MATERIA MEDICA—HOMEOPATHIC (AUGUST).

1. Give the characteristic skin symptoms of graphites. 2. Give the neuralgic symptoms of colocynth. 3. Differentiate china and ipecac in hemorrhages. 4. Differentiate in general between belladonna, hyoscy. and stramon. 5. Give indications for two remedies in typhoid. 6. Describe the general effects of opium. 7. Give two remedies acting on the liver, with special indications. 8. Give brief outline of the action of quinin. 9. Give two remedies in the treatment of erysipelas, with indications. 10. What symptoms indicate sanguinaria in headaches?

MATERIA MEDICA AND THERAPEUTICS (JULY).

1. What do you understand by the cumulative action of a drug? 2. What are the modes of administration of medicine, and how does the dosage vary as compared to that of the mouth? 3. Give three drugs and their dosage that, in their excretion by the kidneys, will (*a*) render the urine antiseptic; (*b*) render the urine alkaline in reaction; (*c*) render the urine acid in reaction. 4. Name two drugs that will increase the secretion of bile by the liver cells (direct cholagogues), two that increase the flow of bile from the gall bladder into the intestinal tract (indirect cholagogues). 5. Compare the physiologic action on the heart of digitalis with strophanthus. 6. What would you consider a safe initial dose of hydrochlorate of cocain administered hypodermatically to an adult? 7. Compare the physiologic action of hyoscyamus with belladonna on the nervous system. 8. Give the medium adult dose of the following: Sulphate of morphin, tincture of belladonna, sulphate of strychnia, nitrate of silver, corrosive sublimate. 9. What is the composition of the following: Dover's powders, Fowler's solution, Basham's mixture? 10. What do you understand by the incompatibility of drugs? Name the general incompatibilities of iron.

MATERIA MEDICA AND THERAPEUTICS—ECLECTIC (JULY).

1. Give therapeutic application of digitalis—jaborandi and hyoscyamus. 2. Give indications and contraindications for morphia and chloral hydrate. 3. Give indications for strychnia. How would you give it and in what dose? 4. Give indications for aconite, veratrum, strophanthus, macrotys, and bryonia, with physiologic effect of each. 5. What is materia medica? Therapeutics? 6. How does gelsemium quiet a restless, fretful patient? 7. Differentiate a muriatic and nitric acid tongue. 8. What do you understand by the term alteratives; expectorants? 9. Specific diagnosis; specific medication. Define each, and on what are they based? 10. What form of medicine do you prefer, and why?

BACTERIOLOGY (AUGUST).

1. Name two anaërobic bacteria, and give a method of cultivating this class of bacteria. 2. Give the characteristics of anthrax bacilli. 3. Name three acid-resisting bacteria. 4. Name two ways by which bacteria propagate. 5. What is necessary to prove the pathogenic rôle of a pathogenic micro organism? 6. Give the differential bacteriologic diagnosis of typhoid and colon bacilli. 7. Describe gonococci, and give method of staining and method of culture. 8. What is Gram's solution, and how is it used? 9. What precautions are necessary in handling specimens that are to be examined for bacterial infections? 10. What bacteria are found in gangrene?

BACTERIOLOGY (JULY).

1. What do you understand by the terms toxins, ptomains, leucomains? 2. Bacteria, being devoid of chlorophyll, must obtain their nitrogen and carbon from what source in general? 3. In addition to carbon and nitrogen, what substance is required for the life and development of bacterial growth? 4. Define anaërobic, aërobic and facultative bacteria. 5. Name the three classes of bacteria as to form; illustrate each. 6. How are the micrococci subdivided, as seen in growing culture? Illustrate. 7. What is the difference between sterilization and disinfection? 8. What is an antiseptic, a germicide? Give examples of each. 9. What organism is generally accepted as the infective factor in puerperal septicemia? 10. Discuss the conditions necessary to infection; also give your ideas as to prevention of same, with method of disinfection.

PHYSIOLOGY (JULY).

1. What is meant by the proximate principles of the body, and how are they classified? 2. What is the composition of the gastric juice? In normal digestion what is the reaction shortly after taking food? 3. What is the action of pancreatic juice on albumin? Starch? Fats? Cane sugar? 4. What is considered a normal ratio in numbers between white and red blood corpuscles? How modified by prolonged exertion? By a hearty meal? 5. What is supposed to cause the first sound of the heart? The second sound? What constitutes a cardiac cycle? 6. What is average amount of air taken into the chest at each inspiration? 7. What is the average amount of water excreted in the urine in 24 hours? Urea? Uric acid? 8. What is glycogen? Give its origin and use. 9. What changes occur in the feces from obstruction of the common bile duct of the liver? 10. What is understood by reflex action? Illustrate by a drawing.

PHYSIOLOGY (AUGUST).

1. Name the digestive fluids found in the alimentary canal, and tell where each is produced. 2. Describe the circulation of the blood and give the causes of its flow in the different vessels. 3. Name the different organs concerned in the excretion of waste material of the body and give the principal ingredients eliminated by each. 4. Describe the lymphatic system and give its functions. 5. Name the principal divisions of the brain. 6. Describe the process of respiration. 7. Describe reflex action. 8. Describe stomach digestion. 9. Describe the portal circulation. 10. Name the cranial nerves and the function of each.

SURGERY (AUGUST).

1. Define fracture; compound fracture; comminuted fracture; impacted fracture; intracapsular fracture. 2. How would you recognize and dress a supracondyloid fracture of the humerus? 3. How would you treat a punctured wound; a lacerated wound? 4. Name different measures by which you would control hemorrhage in wounds. 5. In venous hemorrhage requiring surgical interference: First. How would you diagnose same? Second. What would be your treatment, and on what would it depend? Third. What are the special dangers in wounds of the internal jugular, subclavian, axillary, femoral and popliteal veins? 6. What is an irreducible hernia? A strangulated hernia, and how would you treat the latter? 7. Give the procedure, or steps, of an operation for inguinal hernia in the male. 8. Define phlegmon and outline treatment. 9. Give an example of a connective tissue tumor; an epithelial tumor; a dermoid tumor; a cystic tumor. 10. Differentiate chancre and chancroid under the following heads: Origin, incubation, situation, commencement, number, shape, surface, secretion, induration, sensibility, histology bubo.

SURGERY (JULY).

1. Arrange a grouping (*a*) showing principal benign tumors, (*b*) principal malignant tumors. 2. Differentiate a bilious colic and

right-sided renal colic. 3. Describe a chancroid. Give its usual symptoms and possible complications. 4. What are the causes of acute prostatitis? Describe a typical case, and give its treatment. 5. Describe the varieties of hemorrhoids, and give your treatment of any one variety. 6. Describe the osseous lesions of syphilis. 7. What is a tumor? Give the causes of tumors. Define homoigous tumor; heterologous tumor. 8. Describe the common forms of club-foot. Give the treatment of any one form. 9. Define shock. Give causes and symptoms. 10. Describe a method of skin-grafting. Under what conditions is skin-grafting employed?

ANATOMY (AUGUST).

Answer any 10 questions, but no more. 1. Describe the male urethra. 2 Describe the prostate glands, giving form, position, structure, blood and nerve supply. 3. Name several forms of hernia, giving the covering of oblique inguinal and femoral from within outward. 4. Name the ductless glands. 5. Describe the ileocecal valve. 6. Describe the clavicle, giving its structure and articulations. 7. What is the thorax, what does it contain, and of what is it formed? 8. Name the branches of the fifth nerve, giving general distribution of each. 9. Bound the abdominal cavity; name its contents and apertures, and what do they transmit? 10. Describe the peritoneum, and what does it invest? 11. Describe the lungs, giving structure, blood and nerve supply. 12. Describe the elbow joint, giving its articulations and ligaments. 13. Name the subdivisions of the alimentary canal, with its accessory organs. 14. Name the cranial nerves of special sense, and those of motion. 15. Name the three classes of articulations, giving examples of each.

ANATOMY (JULY).

Answer any 10, but no more. 1. What bones form the ankle joint? 2. Describe the thoracic duct. 3. The uterus, giving normal position. 4. The fallopian tubes. 5. The rectum. 6. The colon. 7. What are the branches of the axillary artery? 8. Give points of selection for ligation of axillary artery. 9. Give points of selection for ligation of subclavian artery. 10. What are the appendages of the skin? 11. What is the mesentery? 12. Locate and describe the prostate gland. 13. What viscera in the right hypochondriac region? 14. In the epigastric region? 15. In the hypogastric region?

OBSTETRICS (JULY).

1. What is menstruation? Give its clinical course, and describe the changes which take place in the endometrium. 2. How do you measure the conjugate diameters of the pelvis, and what degree of contraction is compatible with spontaneous delivery? 3. How may pregnancy be recognized in the early months, and on what evidence may the diagnosis be justified? 4. Give the vertex presentations in the order of their frequency and the mechanism of the most common. 5. What antiseptic measures should be employed in the conduct of labor, and how should they be carried out? 6. Describe the propelling forces in labor, and give the causes and treatment of inertia. 7. What are the indications for and rules to be observed in the use of obstetrical forceps? 8. Give the causes, signs, symptoms and treatment of puerperal sepsis. 9. What is involution, and how long a time is required for this process? 10. What is mastitis? Give its symptoms and treatment.

OBSTETRICS (AUGUST).

1. Give the diameters of the normal fetal head at full term. 2. Describe the formation of the placenta, and give the management of (*a*) retained placenta after abortion, (*b*) retained placenta after normal labor at full term. 3. Describe the fetal circulation, and state what changes take place in it at birth. 4. Give two possible physiologic causes of icterus neonatorum and differentiate the pathologic and physiologic forms. 5. Diagnose and give the prognosis and management of a breech presentation. 6. Give the pathology, prognosis and treatment of puerperal eclampsia. 7. How would you manage a case of labor at term with membranes ruptured and cord presenting? 8. Name the principal causes of sterility. 9. What results are likely to follow an unrepaired laceration of (*a*) the cervix uteri, (*b*) the perineum down to the sphincter ani? 10. What conditions should govern the use of anesthesia in labor? What anesthetic would you use, and why?

PATHOLOGY (AUGUST).

1. Name three predisposing causes of disease, and give example of each. 2. Define hypertrophy, hyperplasia, edema, anasarca, ascites. 3. Describe a diphtheritic inflammation of a mucous membrane. 4. Name the causes of hypertrophy of the liver. 5. Enumerate the causes and varieties of meningitis. 6. Name the causes, and give pathologic description of phlebitis. 7. What is the pathology of tabes dorsalis? 8. Describe the lymphatic involvement in an advanced case of carcinoma of the breast. 9. Examination of microscopic specimens. 10. Examination of pathologic specimens.

PATHOLOGY (JULY).

1. Describe the laboratory methods of service in the diagnosis of tubercular meningitis. 2. Enumerate the varieties of non-diabetic glycosuria. 3. In what conditions may eosinophilia be present? 4. Describe the character and extent of the lesions found in ischiorectal abscess. 5. Give causes and the most frequent localization of brain abscess. 6. Enumerate the causes of anuria. 7. Describe lipoma, and give its most frequent locations. 8. Define and describe surgical shock. 9. Examination of gross pathologic specimens. 10. Examination of microscopic sections.

CHEMISTRY (JULY).

1. What is the antidote for concentrated lye? 2. Why should fats or oils be avoided in phosphorus or phenol poisoning? 3. What element is indicated in anemic conditions? 4. Why is the blood saline? 5. Name the two normal pigments in the bile. 6. Why is toast more digestible than untoasted bread? 7. Calcium carbonate is an essential component of what parts of the human economy? 8. Where does protagon occur in the body? 9. What acid is found in sweat? 10. Name a carbohydrate that occurs in the urine pathologically.

CHEMISTRY (AUGUST).

Answer any 10, but no more. 1. State the law of definite proportions; of multiple proportions; illustrate each law by example or formulæ. 2. Define the words acid, base, salt. Name and define three classes of salts. 3. Give formulæ for (1) carbon monoxid, (2) carbon dioxid, (3) mercurous chlorid, (4) mercuric chlorid, (5) sodium sulphite, (6) ferrous sulphate, (7) hydrogen dioxid, (8) potassium permanganate, (9) nitric acid, (10) ethyl oxid. 4. Give the names, symbols and properties of the four elements classed as haloids. 5. Give the names, symbols and properties of the elements classed as alkali metals. 6. What is the effect of heat (to redness) on calcium carbonate? What produces the "hardness" of certain waters, and how does boiling soften them? 7. Describe a commercial process for the manufacture of sodium carbonate. 8. Describe two tests by which the mercurous salts may be distinguished from mercuric salts. 9. Define the following class names: (1) Hydrocarbons, (2) alcohols, (3) aldehyds, (4) organic acids, (5) ethers, (6) compound ethers, (7) carbohydrates, (8) amines. 10. Classify the following substances: (1) Marsh gas, (2) tallow, (3) chloral, (4) glycerin, (5) carbolic acid (phenol), (6) glucose, (7) iodoform, (8) benzine, (9) salol, (10) strychnin. 11. What is the normal reaction of fresh urine? How would you differentiate between alkalinity from fixed alkalies and alkalinity from decomposition? 12. Describe a quantitative test for urea. 13. Explain the formation of a phosphatic calculus with a uric acid nucleus. 14. Describe Fehling's test for sugar, and state the chemical property of glucose on which it is based. 15. In testing for albumin by heat, what other substance may cause a cloudy precipitate, and how may its presence be determined? In testing for albumin by nitric acid what other substance may cause a cloudy ring, and how may its presence be determined?

THEORY AND PRACTICE—HOMEOPATHIC (JULY).

Answer any 10 questions, but no more. 1. Define ascites. What are the causes, and how would you differentiate it? 2. Differentiate appendicitis, gallstone colic, and small right ovarian cyst with twisted pedicle. 3. Diagnose and treat a catarrhal enteritis. 4. Diagnose and outline treatment for obstruction of the cystic duct and of the common bile duct. 5. How would you recognize an internal hemorrhage, and what would you do for it? 6. What constitutes normal salt solution, and for what would you use it? 7. Define chalazion and blepharitis, and outline treatment for each. 8. What is anemia, and how would you treat it? 9. Diagnose and treat an acute nephritis. 10. What is marasmus? Outline general care of 6-month old child so afflicted. 11. Give, briefly, your views in relation to baths—hot, warm, or cold—for the sick, how and for what you use them. 12. Diagnose pleurisy; give its complications. Outline treatment, medicinal and otherwise. 13. What is herpes zoster? Give causes and treatment. 14. What is a boil? What is a carbuncle? Give treatment for each. 15. What do you regard as the most worthy and important object in the practice of medicine?

THEORY AND PRACTICE—HOMEOPATHIC (AUGUST).

1. Give etiology, clinical course and general treatment of facial erysipelas. 2. Outline your treatment in a case of acute articular rheumatism. 3. Differentiate carefully between intercostal neuralgia, myalgia and pleurisy. 4. Give general and remedial treatment in an early case of diabetes mellitus. Prognosis? 5. Give symptoms and treatment of cholera infantum. 6. Give etiology, symptoms and treatment of angina pectoris. 7. Define goiter, giving treatment and prognosis in exophthalmic variety. 8. Give etiology and symptoms of a mitral and an aortic regurgitation. 9. Give etiology, symptoms and treatment of chronic cystitis. 10. Differentiate right renal colic from gallstone colic.

THEORY AND PRACTICE—ECLECTIC (JULY).

1. Give symptoms of intestinal infection, and name treatment for same. 2. How would you treat a tubercular knee? 3. Give treatment for pneumonia, with specific indications for each drug used. 4. When would you, and when would you not use poultices? 5. Name some of the common lesions of the heart, with remedies for the same. 6. What are some of the common causes of headache? Give treatment. 7. Write a prescription for pleurisy without effusion, where pain is sharp and increased by motion. 8. Diagnose a true case of diphtheria, and give indications for remedies. 9. What are the early symptoms of pulmonary tuberculosis as distinctive from a chronic pneumonia? 10. When does appendicitis cease to be medical and become surgical?

MEDICINE (AUGUST).

1. Differentiate varicella and variola; give a concise clinical history of each typical case. 2. What do you understand by enteroptosis; what are the common pathologic conditions involved? 3. Differentiate cancer of the stomach at an early stage, before any appreciable tumor, from catarrhal affections. 4. What is Hodgkins' disease; give symptoms and etiology. 5. Give a differential diagnosis of scarlet fever and measles. 6. Differentiate diphtheria and the various forms of tonsillitis at an early stage; give the treatment of diphtheria. 7. Give the etiology and pathology of tuberculosis of the intestines. 8. Give the differential symptoms of bronchiectasis and emphysema. 9. Describe the causative relations of syphilis and alcohol in atheromatous degeneration. 10. Give the clinical history of chronic parenchymatous nephritis and the urinary finding.

THEORY AND PRACTICE (JULY).

Answer any 10 questions. 1. Give diagnosis and treatment of acute purulent otitis media. 2. (*a*) Treatment of chronic follicular pharyngitis; (*b*) treatment of acute catarrhal laryngitis. 3. Give etiology, clinical history and treatment of cholera morbus. 4. How would you manage a case of acute gastro-intestinal catarrh in a child under 2 years old? 5. (*a*) Mention most common causes of constipation; (*b*) give treatment of chronic form. 6. What are the usual methods employed in examination of feces, and mention the clinical importance of each. 7. Give symptoms and treatment of acute cystitis. 8. Define and give symptoms and treatment of migraine. 9. Give etiology, characteristic symptoms and treatment of acute chorea. 10. (*a*) How would you recognize and treat diabetes mellitus? (*b*) Describe a diabetic blood test. 11. (*a*) Locate normal apex beat of the heart; (*b*) give diagnostic significance of displacement to the left; to the right; upward, and downward displacements. 12. Give treatment of eczema. 13. Give differential diagnosis of ascites and ovarian cyst. 14. Give diagnosis, prognosis and treatment of endometritis. 15. Write twenty lines on prophylaxis of pulmonary tuberculosis.

The Public Service.

Navy Changes.

List of changes in the Medical Corps of the Navy for the week ending Nov. 14, 1903:

Surgeon D. N. Carpenter, detached from the *Chicago* and ordered home to wait orders.

Asst. Surgeon R. B. Chapman, appointed assistant surgeon with rank of lieutenant, junior grade, from Oct. 28, 1903.

Surgeon O. Diehl, detached from the *Oregon* and ordered to the *New Orleans*.

P. A. Surgeon M. S. Guest, detached from the *New Orleans* and ordered to the *Oregon*.

P. A. Surgeon H. D. Wilson, detached from the Naval Station, Olongapo, P. I., and ordered to the *Vicksburg*.

Asst. Surgeon G. M. Mayers, detached from the *Vicksburg* and ordered to the *El Cano*.

Asst. Surgeon J. M. Brister, detached from the *El Cano* and ordered to the *Isla de Cuba*.

Surgeon C. Biddle, detached from the *Puritan* and ordered to the *Lancaster*.

Marine-Hospital Service.

Official list of the changes of station and duties of commissioned and non-commissioned officers of the Public Health and Marine-Hospital Service for the seven days ended Nov. 12, 1903:

Asst. Surgeon-General W. J. Pettus, detailed as inspector of unserviceable property in the Hygienic Laboratory.

P. A. Surgeon J. B. Green, granted leave of absence for twenty days from November 15.

P. A Surgeon J. F. Anderson, to proceed to Detroit for special temporary duty.

Asst. Surgeon J. W. Trask, granted leave of absence for four days from Oct. 17, 1903, under paragraph 191 of the Regulations.

Asst. Surgeon T. W. Salmon, to proceed to Philadelphia and report to medical officer in command for duty.

A. A. Surgeon W. C. Mason, granted leave of absence for five days from November 19.

A. A. Surgeon Henry Owen, granted leave of absence for thirty days from November 8.

Pharmacist John Achenbach, granted leave of absence for seventeen days from November 20.

BOARD CONVENED.

Board convened at Chelsea, Mass., November 12, for physical examination of an officer of the Revenue Cutter Service. Detail for the board: Surgeon R. M. Woodward, chairman; Asst.-Surgeon W. C. Rucker, recorder.

APPOINTMENTS.

Thomas William Salmon of New York, commissioned (recess) as assistant surgeon, Nov. 7, 1903.

George Neves of Oklahoma, appointed pharmacist of the third class, Nov. 11, 1903.

RESIGNATION.

Pharmacist Frank Siedenburg resigned, to take effect Oct. 4, 1903.

Health Reports.

The following cases of smallpox, yellow fever, cholera and plague have been reported to the Surgeon General, Public Health and Marine-Hospital Service, during the week ended Nov. 13, 1903:

SMALLPOX—UNITED STATES.

Alabama: Mobile, Nov. 1-7, 2 cases.
Illinois: Belleville, Nov. 1-7, 11 cases, 1 death; Chicago, Nov. 1-7, 3 cases.
Indiana: Indianapolis, Oct. 25-31, 2 cases.
Louisiana: New Orleans, Nov. 1-7, 3 cases, 2 imported.
Maine: Grand Isle, Oct. 1-31, 25 cases.
Massachusetts: Haverhill, Nov. 1-7, 1 case.
Michigan: Detroit, Nov. 1-7, 2 cases.
Missouri: St. Louis, Oct. 25-31, 1 case.
New Hampshire: Manchester, Nov. 1-7, 5 cases.
New Jersey: Camden, Nov. 1-7, 1 case.
New York: New York, Nov. 1-7, 2 cases.
Ohio: Cincinnati, Oct. 31-Nov. 6, 1 case; Nov. 1-7, Cleveland, 1 case; Dayton, 2 cases; Warren, 1 case; Youngstown, 1 case.
Pennsylvania: Nov. 1-7, Erie, 1 case; Johnstown, 1 death; Philadelphia, 42 cases, 4 deaths; Pittsburg, 30 cases, 14 deaths.
Rhode Island: Providence, Nov. 1-7, 1 case.
Tennessee: Memphis, Nov. 1-7, 6 cases.
Utah: Salt Lake City, Oct. 25-31, 1 case.
Wisconsin: Milwaukee, Nov. 1-7, 1 case.

SMALLPOX—FOREIGN.

Austria-Hungary: Prague, Oct. 11-24, 21 cases.
Belgium: Oct. 18-24, Antwerp, 2 cases; Brussels, 1 death.
Colombia: Barranquilla, Oct. 19-25, 1 death.
France: Marseilles, Sept. 1-30, 25 deaths; Paris, Oct. 18-24, 8 cases.
Great Britain: Bradford, Oct. 10-24, 4 cases; Glasgow, Oct. 24-30, 18 cases; Oct. 18-24, Leeds, 1 case; Liverpool, 4 cases; London, 26 cases; Newcastle-on-Tyne, 10 cases; Sheffield, 1 case.
Italy: Catania, Oct. 16-22, 1 death; Palermo, Oct. 18-24, 1 case.
Java: Batavia, Sept. 27-Oct. 3, 5 cases.
Malta: Oct. 11-17, 5 cases.
Mexico: City of Mexico, Oct. 19-25, 3 cases, 2 deaths; Tampico, Oct. 25-31, 1 death.
Russia: Oct. 11-17, Moscow, 1 new case, 5 deaths; Odessa, 1 case; St. Petersburg, 33 cases, 1 death; Warsaw, Oct. 4-10, 4 deaths.
Turkey: Constantinople, Oct. 12-25, 4 deaths; Smyrna, Oct. 12-18, 46 deaths.
Venezuela: Tocuyo, Oct. 16, present.

SMALLPOX—INSULAR.

Philippine Islands: Manila, Sept. 13-26, 2 cases, 1 death.

YELLOW FEVER—UNITED STATES.

Texas: Cannel, Nov. 3-10, 10 cases; Laredo, Nov. 4-10, 120 cases, 18 deaths; Minera, Oct. 30-Nov. 6, 10 cases; San Antonio, Nov. 2-10, 3 cases, 1 death; Dewitt County, Nov. 4, 1 case.

YELLOW FEVER—FOREIGN.

Costa Rica: Limon, Oct. 23-29, 2 cases, 2 deaths.
Mexico: Oct. 4-10, Citas, 6 cases, 4 deaths; Cuidad Victoria, 19 cases, 20 deaths; Linares, 376 cases, 34 deaths; Merida, 3 cases, 1 death; Progreso, 1 case; Tampico, 7 cases, 1 death; Tehuantepec, 1 death; Vera Cruz, Oct. 25-31, 43 cases, 13 deaths.

CHOLERA—INSULAR.

Philippine Islands: Sept. 13-26, Manila, 148 cases, 134 deaths; Provinces, 3,101 cases, 1,439 deaths.

CHOLERA—FOREIGN.

China: Hongkong, Sept. 20-26, 1 case, 1 death.
Japan: Yokohama, Oct. 4-10, 1 case, 1 death.
Turkey: Syria, Alexandretta, Oct. 11-17, 4 cases, 2 deaths.

PLAGUE—UNITED STATES.

California: San Francisco, Oct. 20-29, 4 cases, 4 deaths.

PLAGUE—INSULAR.

Philippine Islands: Manila, Sept. 13-26, 2 cases, 2 deaths.

PLAGUE—FOREIGN.

China: Hongkong, Sept. 20-26, 2 cases, 1 death.
Formosa: Sept. 24-30, 1 new case, 2 deaths.
Japan: Yokohama, Oct. 4-10, 1 case, 1 death.
Mauritius: Oct. 2-8, 54 deaths.

Medical Organization.

Organization in Colorado.

J. M. BLAINE, M.D.
SECRETARY COLORADO STATE MEDICAL SOCIETY.

It should be remembered that the "backbone" of the continent passes through our state and that these spinous and transverse processes are not the best things in the world on which to found colonies and sustain vast populations; hence, one will find whole counties in this state where there are no physicians, and there are more than twenty counties in the state with from one to six physicians each. Under these circumstances it was thought best last year, when we adopted the new constitution, to modify it in one particular, viz., that persons in good standing in June, 1902, could remain members of the state society by paying the usual dues.

There were in the state sixty-six members who were protected by this proviso, as they were not members of county societies. There was no provision made, however, for new members to join the society except through membership in a local society. After trying this plan for a year our house of delegates, at the recent meeting in October, amended Chapter I, Article 11, of the by-laws so that there is now no membership in the state society. We made provision for the aforesaid "sixty-six" so that they could join the nearest county medical society without paying an initiation fee, provided the secretary of the state society would certify to their standing. This puts Colorado in line with the other states on the American Medical Association plan.

This brings us down to the question of providing local societies at convenient points throughout the state so that our men may not lose their standing in the American Medical Association.

When the new constitution was adopted there were ten county societies in the state. These were furnished with the model constitution sent out by the American Medical Association committee, and each one adopted it. In addition to these, we have, during the past year, organized seven new societies. Owing to the vastness of our state and the distances between centers of population, our councilors have delegated the work of organization to the secretary. This is a pleasant duty, and as a rule the work is very easy, for the physicians appreciate the fact that under the reorganization scheme a county society means something, as it carries with it representation in the state society, and is the only portal to the American Medical Association.

Last summer I received a letter from a physician in the southern part of the state asking how to join the state society. I answered that he could either join the nearest county society, which was 140 miles away, across a mountain range, requiring him to travel on three different lines of railroad, or organize a society of their own. I wrote to one of our prominent physicians living in that part of the state, and he took the matter up, and by combining five counties he organized a splendid society with 15 charter members. I received

the program of their last meeting and it would compare very favorably with a program of any society.

Last July I visited five counties and organized four societies, in one instance combining two counties. With three more societies (one of which is now under way) the "Western Slope" will be thoroughly organized, and I expect by our next meeting to be able to report societies organized in every available center.

In addition to the amendment mentioned, the house of delegates relieved the secretary from being chairman of the publishing committee and appointed a committee of three, with instructions to establish an official journal in which should be published the papers presented at the annual meeting and other matters of interest to the society. The section relating to membership in county societies was amended to read as follows:

Every reputable and legally qualified physician residing in this county who does not practice or claim to practice and agrees not to practice sectarian medicine, and who is not affiliated with a sectarian school or society, shall be eligible for membership.

This, we think, is a little stronger and better defined than the model furnished by the committee.

Up to June, 1902, when the new constitution was adopted, we had a total membership of 340. At our recent meeting in October the chartered county societies showed a membership of 554, and I expect to be able to report at our next meeting (October, 1904) that our membership has doubled.

Under the old system our dues were $5 per year. Under the new, and for the present, we assess each county society $3 per capita, so our revenue will be more than formerly.

We like the new plan. It has doubled our membership and unified the profession in the state, so that we will be in position to demand more courteous treatment at the hands of "Jim Crow" governors who have not enough gray matter in their brains to see the benefit of a good medical bill, or enough starch in their spinal cords to sign it; but, best of all, it constitutes the county society judge, jury and executioner and forces a man to be ethical at home before he can be a member of the state or national society.

California.

VENTURA COUNTY MEDICAL SOCIETY.—The medical men of the county met at Ventura, October 29, Dr. H. Bert Ellis, Los Angeles, president of the state society being present, and organized a county society with the following officers: Dr. John H. Love, Ventura, president; Dr. George A. Broughton, Oxnard, vice-president, and Dr. A. A. Maulhardt, Oxnard, secretary and treasurer.

Illinois.

MASON COUNTY MEDICAL SOCIETY.—This society was organized in Havana the first week in November with the following officers: Dr. Philip L. Diefendacher, Havana, president; Dr. Edward W. Paul, Forest City, vice-president; Dr. Harry H. Hanly, Havana, secretary, and Dr. C. Fred Grimmer, Topeka, treasurer.

Iowa.

SHELBY COUNTY MEDICAL SOCIETY.—On October 30, the physicians of the county met at Shelby and organized a county society with twelve charter members, and the following officers: Dr. N. Jasper Jones, Shelby, president; Dr. Eugene J. Smith, Harlan, vice-president, and Dr. Hennesy, Panama, secretary.

Louisiana.

ST. JAMES' PARISH MEDICAL SOCIETY.—At the meeting for organization, October 31, Dr. Peter C. Tircuit, St. Patricks, was elected president; Dr. Louis A. Gaudin, Convent, vice-president, and Dr. J. F. Buquoi, Colomb, secretary and treasurer.

CALCASIEU PARISH MEDICAL SOCIETY.—This society was formally organized on the standard plan, November 2, at Lake Charles, with the following officers: Dr. Allen J. Perkins, Lake Charles, president; Dr. Perrault, Jennings, vice-president, and Dr. Pearl Munday, secretary and treasurer.

ASSUMPTION PARISH MEDICAL SOCIETY.—The physicians of the parish met at Napoleonville, October 22, were addressed by Dr. John M. Barrier, Delhi, president of the Louisiana State Medical Society, and organized a parish medical society on the standard plan, with the following officers: President, Dr. Thomas B. Pugh, Napoleonville; vice-president, Dr. Adolphe A. Aucoin, Plattenville, and secretary and treasurer, Dr. Adrian A. Landry, Paincourtville.

North Carolina.

WAYNE COUNTY MEDICAL SOCIETY.—This society was reorganized at Goldsboro, October 26, with the aid of Dr. Albert Anderson, Wilson, councilor for the Fourth District. The following officers were elected: Dr. Marcus E. Robinson, Goldsboro, president; Dr. William Spicer, Goldsboro, vice-president; Dr. William H. H. Cobb, Jr., Goldsboro, secretary; Dr. Theodore L. Ginn, Goldsboro, treasurer; Drs. William H. H. Cobb, Goldsboro, J. B. Kennedy, and William T. Turlington, Fremont, censors, and Dr. John F. Miller, delegate to the Medical Society of the State of North Carolina.

Society Proceedings.

COMING MEETINGS.

Southern Surgical and Gynecological Association, Birmingham, Ala., Dec. 15.

Western Surgical and Gynecological Association, Denver, Dec. 28-29.

COLORADO STATE MEDICAL SOCIETY.

Twenty-Third Annual Convention, held in Denver, Oct. 6-8, 1903.

(*Continued from page 982.*)

Osteo-arthritis and Rheumatoid Arthritis.

DR. B. C. LEAVITT, Denver, thinks that the two affections are often confounded. The severe cases of osteo-arthritis, he asserts, would not have reached this stage of they had been properly treated. As soon as the disease is recognized they should receive a tonic treatment, meat and fresh air being especially indicated. The joints should be wrapped in moistened gauze, covered with rubber tissue. They should be treated as tubercular patients. Going to Hot Springs has no medicinal value.

Incipient and Acute Insane—Recoverability and the Factors Therein.

DR. J. E. COURTNEY, Denver, asserts that the most important factor for recovery is the earliest possible recognition and treatment. The statistics of institutions are all uniform on these points. The percentage of recovery in which the attack has existed three months or less, is upward of 50 per cent. of all recoveries, and after a duration of six months previous to admission the recovery rate falls.

Soup Diet in Typhoid Fever.

DR. H. B. WHITNEY, Denver, fed 17 of his patients suffering from typhoid with soup. With the exception of one case that died from meningitis they were singularly devoid of either severe toxic gastro-intestinal symptoms; no delirium, sleeplessness, dry tongue, tympany or diarrhea. The diet was well borne. The soup is prepared according to the following formula: Five pounds of meat is put in 10 quarts of water, brought to a boil and skimmed. One pound of pearl barley is added, the whole is cooked for six hours, strained and seasoned. The patient received 40 ounces of the soup between 7 a. m. and 7 p. m.

The Treatment of Neurasthenia.

DR. HOWELL T. PERSHING, Denver, divides the remedies into (a) those whose chief effect is to prevent the loss of nervous energy—prevention of emotional disturbances by reassurance and favorable suggestion, by forming a habit of relaxation and repose, limitation of work, prevention of toxic condition, removal of peripheral irritation, reduction of cortical irritability by medicine, and sleep; (b) remedies whose chief effect is to increase the income of nervous energy—food and medicines, and (c) remedies used empirically whose action is complex or obscure—electricity, hydrotherapy, massage, exercise.

The problem of selection and combination of remedies the physician must approach in the spirit of an artist rather than in that of a pure scientist. His greatest skill will be demanded by those who are not financially able to command the luxuries of the rest cure and who must return to their work.

Case of Hysterical Hyperpyrexia and Hemoptysis.

DR. BERNARD OETTINGER, Denver, reported the case of a man 24 years old sent to Denver with diagnosis of tuberculosis.

On admission to the Jewish Hospital for Consumptives slight dullness at base of right lung could be detected, but no râles. He coughed up bloody mucus at times. Temperature normal. He was put to bed, and on the same day the thermometer registered 108 F. Two days later the temperature record was 114 F. by mouth and rectum. Complains he can not see well. Complete ptosis of right lid. Papillary reaction sluggish. Complete anesthesia over top of head, chest, back and shoulders. All possible points of deception or simulation were considered and excluded.

A Case of Congenital Dilatation of Colon.

Dr. C. K. Fleming, Denver, reported the case of a man 25 years old who suffered from chronic constipation from infancy. He was 8 days old when he had his first bowel movement, 80 days when he had the second movement. From the second year his bowels moved about four times a year. His movements were very large. Relief from distention could only be obtained by the use of rectal tube and prolonged irrigation.

During the intervals he felt perfectly well. The patient consented to an exploratory laparotomy. On opening the abdomen a large collapsed colon was readily found and delivered from the abdominal cavity. In color it resembled an ovarian cyst; it extended about 3 inches below splenic flexure to the anus, involving the descending colon, sigmoid and rectum. The operation consisted in plaiting the sac longitudinally from one extremity to the other. Seven or eight folds were taken. The plicated sac was suspended by a catgut suture to the abdominal wall. Convalescence was uninterrupted. His bowels move by cathartics daily, which was never possible before the operation.

Congenital Dislocation of Hip.

Dr. George B. Packard, Denver, reported the histories of six cases, three of which were operated on by Professor Lorenz and three by the author. Three of the cases gave good results and three produced anterior transpositions.

Injuries of the Elbow Joint.

Dr. C. B. Lyman employs plaster-of-paris splints made of 8 or 10 thicknesses of gauze, saturated thoroughly in liquid plaster of paris, one to extend from axilla to fingers, the other from neck to fingers. These are applied next to the skin and secured by roller bandage. The arm can then be flexed to any angle desired. The arm is then held in that position until the splints become hard. He does not believe in passive motion.

Radium.

Dr. G. H. Stover exhibited some radium chlorid and described various experiments which he made. He applied it in three cases of cancer, but so far the results were not satisfactory. He thinks radium will never equal the *x*-ray for skiagraphic work, nor probably as a therapeutic agent.

The Passing of the Curette and Douche.

Dr. H. G. Wetherill, Denver, maintains that the curette and bichlorid douche should not be used in acute infection of the female genital organs. They are unnecessary and universally injurious. The patients that have recovered after such operation have done so in spite of the treatment. The treatment he uses as a substitute is the flushing of the uterus through a double drainage tube with alcohol of varying strength, according to the severity of the symptoms and the degree of smarting it produces at the vaginal outlet. This is a modification of the alcohol method of Corossa. This treatment is used in the Woman's Hospital for all intrauterine infections after abortion, complete or incomplete, or labor or term.

Report of a Case of Nephro-ureterectomy.

Dr. Chas. H. McLean, Denver, reported the case of a man aged 72 years, who 30 years ago had an attack of excruciating pain in the region of left kidney extending to penis and left testicle, lasting one day and terminating rather abruptly. Ten years ago had another such attack, and since had renal attacks about every six months.

A year ago during an attack had a hemorrhage from kidney, and passed blood every two or three months since, accompanied by paroxysms of pain, nausea, chilliness and light fever. For last two or three months the hemorrhage is continuous. Patient consented to an operation. The kidney was found normal. A sound passed into the urethra met with an obstruction in the region of the pelvic brim. The ureter was found bent on itself and held firmly by adhesions. After separating the adhesions an attempt to pass the sound was not successful on account of thickening and tumefaction. The kidney and ureter were excised. Patient made good recovery.

Therapeutics of Whooping Cough.

Dr. J. Tracy Melvin, Sagauche, enthusiastically recommended the use of antipyrin internally and also as a spray of a 4 per cent. solution. He used exclusively this treatment in 14 cases, all of whom recovered in from twenty-two to twenty-six days. He supplements the antipyrin treatment with loading the inhaled air with vapor of creosote, pure and crude carbolic acids.

Specifics and Specific Treatment in Treatment of Pulmonary Tuberculosis.

Dr. S. Simon, Denver, presented a historical review of measures and methods which have been considered specifics in their time and generation. He concludes with the statement that he does not believe "there is or ever will be any one remedy which will prove specific." He thinks the one great therapeutic measure which is almost specific is plenty of pure aseptic air.

Treatment of Tubercular Ulceration of Rectum and Perianal Region.

Dr. P. Mayhew, Colorado Springs, treats the above condition as follows: He paints the ulcer with a saturated solution of trichloracetic acid. The next day this is repeated, and after waiting a few minutes for the acid to act the follicle of tissue which has been destroyed is removed with curette. No anesthetic is required. This may be repeated if necessary. The ulcer is dressed with iodin-carrying powders. The patient should be seen every other day. If healthy granulations have appeared there is no necessity of using the acid any more; Lugol's solution may be used instead. The tubercular ulcer is ultimately converted into a simple ulcer. The patients are apt to complain of increased soreness and painful defecation. This is really a sign of increased health.

Cholecystectomy vs. Cholecystostomy.

Dr. Maurice Kahn, Leadville, advocates the entire removal of the gall bladder whenever it is found diseased; he considers it a useless organ, "a settling basin for stone formation, and a suitable harbor for the multiplication of pathogenic bacteria." He operated on a woman 23 years of age who was treated for stomach trouble for several years. The gall bladder filled with pus and stones, was removed. The patient was out of bed 14 days after the operation.

A Case of Multiple Depressed Fracture of the Skull. Recovery.

Dr. S. D. Van Meter, Denver, reported as follows: Male, aged 40. Foreman. While repairing a shafting box was struck on the left side of the head, about center of squamous portion of temporal bone by the end of an iron buck-stay, 11 feet in length, which fell from an upright position, the dead weight of which was estimated at 150 pounds. It struck with sufficient force to drive the injured man's head against the shafting of an upright bolt hard enough to cause two depressed fractures at the point of contact, and fracture at base of brain. The depressed fragments were removed. The first 5 days he lay in a stupor, but there were no signs of compression. At the end of the second week the nurse was able to get him to take some water and liquid food by the mouth. In another week he was able to take sufficient food by the mouth to sustain him. During the sixth week he began to use the vessel for urination and defecation, and commenced to walk.

Dr. Howell T. Pershing, Denver, describes the defects of speech and mind as follows: He hears words but does not understand them; his speech is a jargon made up of words correctly uttered, of others mutilated, and of still others en-

tirely unintelligible, although intended for words. He is word-deaf for his own speech and for that of others. Both reading and writing are defective.

The following papers were also read:

"Electricity," by Dr. J. W. Cline; "Physiologic Factors Engaged in Gallstone Disease," by Dr. Henry Sewall; "Intrabronchial Injections in the Treatment of Certain Chronic Diseases," by Dr. L. B. Lockard; "Criminal Abortion," by Dr. Minnie C. T. Love; "Testing of Vision of Pupils in the Public Schools," by Dr. Edward Jackson; "Testing of Hearing of Pupils in Public Schools," by Dr. W. C. Bane; "An Outline of Albuminuria," by E. C. Hill; "Volvulus of the Stomach," by E. D. Spivak; "Remarks on Nervous Complications in Typhoid Fever," by Dr. Herbert A. Block, Pueblo; "Case of Tetanus Cured by Injecting Antitetanic Serum into the Brain," by Dr. I. B. Perkins, Denver; "Shall We Abandon the Use of Antitoxin?" by Dr. E. F. Waxham, Denver; "Conservative Surgery," by Dr. George C. Steman, Denver; "Heart Disease in Colorado," by Dr. Geo. H. Cattermole, Boulder; "Brain Surgery," by D. F. H. McNaught, Denver; "Results of X-ray Treatment," by Dr. S. B. Childs, Denver; "Local Anesthesia," by F. Gregory Connell, Leadville; "Cancer of the Rectum, Its Approach by the Abdominal Route," by Dr. C. A. Powers, Denver; "Tendon Losses," by Dr. Geo. E. Mill, Denver; "Rectal Siphon," by Dr. R. W. Carwin; "Prevention of Disease of Respiratory Tract," by Dr. A. R. Sallenberger, Colorado Springs; Symposium on the Stomach, participants: Drs. C. D. Spivak, Denver; W. A. Campbell, Colorado Springs; C. A. Powers, M. Kleiner, E. P. Herschey, E. J. A. Rogers, H. B. Whitney, J. E. Kinney, Denver; W. T. Little, Canon City; R. W. Corwin, Pueblo; J. N. Hall, Denver; Geo. A. Moleen, F. G. Byles, S. D. Hopkins, Denver; Geo. P. Libby, Colorado Springs; Robert Levy, J. M. Blaine and I. B. Perkins; "The Buelow Method of Drainage in Pneumopyothorax," by Dr. H. B. Whitney, Denver; "Dislocation of Outer End of Clavicle," by Dr. J. G. Sheldon, Telluride; "Puerperal Infection," by Dr. C. L. Wheaton, Denver; "Medical Education in Colorado," by S. G. Bonney, Denver; "Modern Theories of Immunity," by Dr. Henry Sewall, Denver; "Appendicitis," by Dr. Leonard Freeman, Denver; "Tuberculosis and Its Relation to the Public," by Dr. C. E. Cooper, Denver; "A Case of Schoenlein's Disease," by Dr. C. B. Van Zant, Denver; "A Case of Imperforate Anus with Vulvar Opening," by Dr. W. A. Jayne, Denver.

AMERICAN PUBLIC HEALTH ASSOCIATION.

Proceedings of the Thirty-first Annual Meeting, held at Washington, D. C., Oct. 26 to 30, 1903.

(*Concluded from page 1224.*)

Characteristics of the Stegomyia Fasciata which Affect the Conveyance of Yellow Fever.

DR. H. R. CARTER, Baltimore, read this paper and gave the following summary, among the special characteristics of the stegomyia, which affect its rôle as a carrier of yellow fever:

1. Its distribution is, generally, between latitudes 43 N. and 43 S. on the coasts and low plains of Africa, Asia and the adjacent islands; Australia and the Mediterranean basin of Europe. It is also general on the eastern coast of America from 38 N. to 35 S. latitude. On the west coast it is found at Panama and Guayaquil, and its existence is implied from Guayaquil to Acapulco. In the United States it is general on the coast and low plains of the southern states, except Maryland.

2. It is conveyed by vessels indefinite distances (from Cape Town to Savannah quarantine); in much greater numbers and more often by sail than by steam vessels.

3. It lives a long time—154 days being recorded by Guiteras of an infected insect.

4. Once having acquired the power of transmitting yellow fever, it retains it apparently as long as it lives—59 days being recorded.

A consideration of the four postulates above will render it advisable to safeguard the tropical countries of the East when communication is opened up between them and American ports infected with yellow fever, preferably by freeing the American ports of yellow fever.

5. It propagates preferably in artificial containers, but will propagate in pools where such containers are not available.

6. In America it has been reported only in the vicinity of human dwellings, and seems here not to be a sylvan, paludal or campestral mosquito.

The war against this insect in America should, therefore, be waged about the houses of men, and especially against water in artificial containers. The introduction of a water supply, piped to every house, so as to do away with cisterns and water jars, is the most important measure of sanitary engineering to free a town of this mosquito. Next to this is a system of drainage by covered drains to carry off the rain water and prevent pools. Cesspools are not objectionable on this score.

The stegomyia unquestionably hybernates in the United States, either as adult larva or egg, but if the infected adult hybernates, either a very large proportion of them die, or else the infecting parasite must generally die in the hybernating mosquito. The first seems more probable.

7. It is essentially a house mosquito, and is inclined to stay about the premises where it has fed. Hence, the greater safety of the wholesale district of an infected city as compared with the residence portion.

8. It does not feed in the dark or in bright sunlight. Therefore, in bright daylight or at night without artificial light are the safest times to be in an infected place.

9. The cycle of the yellow fever parasite in the mosquito before it can be conveyed to man is generally, in hot weather, about 14 days or over. Prior to the accomplishments of this cycle (once called the "extrinsic incubation of yellow fever") the mosquito can not convey this disease.

10. It is probably usually conveyed aerially less than 100 yards. In Havana the infected insect is believed to be never aerially conveyed 1,500 feet from the Havana shore.

The direction of the prevailing wind during the day influences its aerial conveyance.

The Effect of Lemon Juice in the Mixture Known as Lemonade on Typhoid Polluted Water.

DR. WILLIAM J. BISSELL, Buffalo, N. Y., read this paper as the result of an investigation prompted by a newspaper statement purporting to be from the Chicago Board of Health to the effect that lemonade would kill the typhoid bacilli. The conclusions drawn were: 1. Lemonade can not be depended on in this rôle. 2. This method of sterilizing typhoid polluted water should be discouraged.

Sodium Sulphite—A Dangerous Food Preservative.

DR. CHARLES HARRINGTON, Boston, said that sodium sulphite is used very extensively as a food-preservative, and, more particularly, for its effect on the color of chopped meat (Hamburg steak) and certain canned vegetables (asparagus and corn). Experiments show it to be a dangerous addition to food.

Studies of Media for the Quantitative Estimation of Bacteria in Water and Sewage.

MR. STEPHEN D. GAGE and MR. GEORGE O. ADAMS, Boston, contributed a joint paper on this subject. Studies of the efficiency of water filters in removing bacteria when estimated by counts on different media, show that there is a considerable variation between the various media, the ratio between the numbers of bacteria in the raw water and in the effluent being affected by the period of incubation, the reaction and the composition of the media. The writers recommend that a standard nomenclature be adopted for the various culture media, the names used to express, as far as possible, the composition of the media.

The Value of Tests for Bacteria of Specific Types as an Index of Pollution.

MR. H. W. CLARK and MR. STEPHEN D. GAGE, Boston, read a joint paper with this title. The colon bacillus is the most numerous type in normal sewage and is accordingly of the most value as a specific indication of pollution. Bacteria of the colon type can be detected in ordinary city sewage in dilutions of 1 to 10,000 to 1 to 100,000. Surface waters having the greatest relative population on their watershed have shown bacteria of the colon type more frequently than others with less population. Ground waters, on the other hand, unless grossly polluted never show bacteria of colon type. Examinations for *B. coli* in different volumes of water show that tests in both one and 100 cubic centimeters should be made, the tests in larger volumes being confirmatory of the tests in the smaller volumes and in cases where a considerable number of samples are taken from the same source tests in the larger volumes usually give more information day by day as to the quality of the water than do the tests in one cubic centimeter.

Epidemics of typhoid fever coincident with the finding of *B. coli* in normally pure waters, i. e., in waters known to be safe under ordinary conditions, but becoming dangerous by the accidental entrance of polluted water, have occurred where, although the entrance of this pollution was known, the danger was not indicated by chemical tests or by an increase in the numbers of bacteria beyond the usual limits of variation for waters of this class.

Report of the Committee on the Significance of Bacillus Coli in Water Supplies.

This report was read by the chairman, Mr. S. C. Prescott. To present a statement of the opinion of the committee individually and as a whole as probably representing the generally accepted views of sanitary bacteriologists as to the significance of *B. coli* in water, the following questions were sent

to each member. The answers appended, except as otherwise stated, were practically as given below. 1. In view of the fact that numerous investigators have found *B. coli* in nature where it could not be directly traced to sewage or fecal pollution, do you believe that the colon test of water is as safe an index of pollution as it was formerly regarded to be? Yes.

2. Are you of the opinion that the number of colon bacilli rather than their presence should be used as a criterion of recent sewage pollution? Yes.

3. To pronounce a water sewage-polluted, would you require as evidence that *B. coli* was present in a majority of one cubic centimeter samples? Yes, in general.

4. Are you in favor of recommending that the examination of large samples for *B. coli*, 100 to 1,000 c.c., be discouraged? Four members say "Yes" in reply, one says "No."

5. In case of a strong presumptive test, what confirmation tests would you require to make certain that the organisms present were *B. coli*? Full set of distinctive cultural tests.

6. In view of the probable presence of streptococci in polluted waters, do you think it desirable that they be isolated as well as *B. coli* to confirm suspicious evidence of pollution offered by *B. coli*? Two would not recommend this; one thinks it would be advantageous occasionally, but not practicable because of increase in routine work; one believes it should be done, when possible, for the sake of securing additional data, and for its general confirmation of the colon test; and one is indefinite.

A Simple Method for the Routine Detection of Colon Bacilli in Water.

Dr. William Royal Stokes, Baltimore, proposes the use of neutral red in a fermentation tube containing 1 per cent. lactose or milk sugar bouillon for the routine detection of colon bacilli in drinking water.

The work of Theobald Smith has shown that the colon bacillus ferments lactose with the production of from 30 to 50 per cent. of gas; that the medium is acidulated, and that the proportion of gas is usually that of one part of carbon dioxid to two of hydrogen. Jordan studied a large number of bacteria isolated from various rivers, and did not find any fermentive bacteria which carried out all of the phenomena in the lactose fermentation tube which is characteristic of the colon bacillus. The writer also isolated a moderate number of fermentive bacteria from the Baltimore water supply, and failed to find any fermentive bacteria exactly resembling the colon bacillus in lactose bouillon in the fermentation tube. In addition to the above characteristics of the colon bacillus in lactose bouillon, this organism causes a characteristic color reaction when neutral red is added to the solution in the proportion of 10 c.c. of a 0.5 per cent. solution to 1 liter. This has been partly described by Irons and others, but they use the test in an ordinary test tube. When used in the fermentation tube, the open bulb remains a port wine color, and the closed bulb a light canary yellow, often showing fluorescence. The curved stem joining the closed and open bulbs shows an abrupt contrast of the colors usually in the middle of the curve. The members of the proteus and cloacæ group usually turn both bulbs yellow, but not always. The method recommended is to inoculate a fermentation tube containing 1 per cent. lactose neutral red in the routine examination of water. If the percentage and amount of gas, the acidity, and the typical yellow-red contrast reaction all occur, the organism can be considered as *Bacillus coli communis*. This is a much shorter method than the isolation in pure culture, which takes from 5 to 7 days, and will also make it much easier to carry out quantitative experiments. These four distinct characteristics would seem to be sufficient to identify the colon bacillus in simple routine work.

The Bacterial Examination of 104 Samples of Water Together with a Detailed Study of the Colon Bacillus.

Dr. William J. Bissell, Buffalo, stated the results of an investigation as follows:

1. The amount of gas produced and the production of indol and putrefactive odors are not constant factors with even true colon bacilli; many of the lactic acid organisms bear a close resemblance to colon bacilli; and it is not safe to depend on presumptive tests alone in determining the presence of colon bacilli in the water.

2. In 104 samples of water from Niagara River examined at respectively 12 and 22 miles below a point where the sewage of over 400,000 people is received, colon bacilli were not found in all cubic centimeter amounts of the sample; there was a decrease in the number of colon bacilli the greater the distance down the stream; the heavy rains did not seem to increase the number of colon bacilli, although the land was used for farming purposes.

3. Colon bacilli can live in well waters at least 109 days, and the human variety seems to have a greater resistance than that from other sources.

4. In polluted water not all cubic centimeter amounts demonstrate the presence of the organisms. The writer believes that many organisms have been mistaken for the colon bacilli in water examinations.

5. There are many wells the waters of which do not contain colon bacilli, even though larger quantities are examined.

Isolation of Bacillus Coli Communis from the Alimentary Tract of Fish and the Significance Thereof.

Mr. George A. Johnson, New York City, said it has been shown that the colon bacillus is taken up by fish, and multiplies rapidly in the intestinal tract. A search of a large number of fish caught in an unpolluted water failed to reveal this organism in the intestinal tract. It would seem possible, therefore, that fish, having taken up the colon bacillus from a polluted water, might migrate to a water of comparative purity, where they would, naturally, discharge the greatly increased number of these organisms. Whether the finding of the colon bacillus deposited in a water in this manner would depreciate the value of the colon test in the examination of a public water supply is a question. It would certainly appear that if the colon bacillus can be thus easily transferred from one water to another that the transportation of the typhoid bacillus may be considered quite as likely. At least, the above results may explain the apparent phenomenon frequently noted where *B. coli communis* is found in comparatively large numbers in waters apparently open to but remote chances for fecal contamination.

Therapeutics.

[It is the aim of this department to aid the general practitioner by giving practical prescriptions and, in brief, methods of treatment for the diseases seen especially in every-day practice. Proper inquiries concerning general formulae and outlines of treatment are answered in these columns without allusion to inquirer.]

Whitehead's Treatment of Gonorrhea.

Dr. W. H. Whitehead, Atlanta, Ga., whose article in the *Therapeutic Gazette* was reviewed in The Journal, November 7, page 1160, calls attention to our misunderstanding of one feature: His treatment is intended to be given by the physician only.

Argyrol in Gonorrhea.

R. O. Kevin, according to an abstract in *Med. Rev. of Reviews*, employs the following abortive treatment of gonorrhea if seen during the first twenty-four hours: After washing out the anterior urethra with warm water, two drams (8.00) of a 20 per cent. solution of argyrol are injected into the urethra and retained for ten minutes. This is repeated every three hours, day and night, for three days. According to the author 85 per cent. of the acute cases can be cured in from three to six weeks.

In chronic anterior urethritis or anterior-posterior urethritis, after irrigating with warm boric acid solution, a 20 per cent. solution of argyrol is applied to the urethral mucous membrane by means of a cotton applicator for two or three days. A 5 per cent. solution is used at the same time for irrigation.

In chronic posterior urethritis 5 to 20 per cent. solutions of

argyrol in lanolin are applied to the posterior urethra by means of sounds in addition to deep injections of the 10 per cent. aqueous solution every two or three days. In cases of cystitis, the bladder is irrigated with a saturated solution of boric acid, followed by a ¼ to 1 ounce (8.-30.) of a 10 to 20 per cent. argyrol solution injected into the bladder and allowed to remain. He recommends it in all chronic conditions of the cervix, urethra and endometrium as less irritating and more valuable than silver nitrate. It is non-irritating, and although containing 30 per cent. of silver it possesses greater penetrating powers than silver nitrate.

[In a recent discussion on the treatment of gonorrheal ophthalmia, W. T. Wilder presented its value in such cases as surpassing at present any other silver preparation. He employs it in 10 per cent. solutions to be dropped into the eye.]

Epistaxis.

In cases of epistaxis occurring in individuals with marked arteriosclerosis, according to an abstract in *N. Y. Med. Jour.*, mustard plasters may be used to the thighs, hot poultices applied to the back of the neck, and the arms should be elevated. As a snuff to check the hemorrhage the following is recommended:

℞. Antipyrini 3iiss 10
Cocainæ hydrochlor. .....gr. viiss 50

M. Sig.: To be used as a snuff to check nasal hemorrhage; or:

℞. Ext. hamamelidis exsic. .....gr. xv 1
Antipyrini 3iiss 10

M. Sig.: To be insufflated into the nares to check hemorrhage.

Hydrogen dioxid in its pure state is a valuable agent, also lemon juice or extract of adrenals (1-1,000), forty drops to half a glass of water. Tincture of iron is a very valuable agent used as follows:

℞. Tinct. ferri chloridi 3iiss 10
Aq. destil 3v 20

M. Sig.: To be applied locally to the nares; or:

℞. Gelatin 3iiss 10
Hydrarg. bichloridi .....gr. xv 1
Sol. sodii chloridi (7-100) .....Oii 1000

M. Sig.: Locally as an application.

A tampon saturated in the following solution is recommended, held in the affected nostril for five minutes:

℞. Cocainæ hydrochlor. .....gr. xv 1
Aq. destil. 3iiss 10

M. Sig.: Locally to the affected part.

To Reduce the Alkalinity of Urine.

Attention has been called by R. Hutchinson, in *British Med. Jour.*, to the value of acid sodium phosphate as an acidifier of urine. According to this author it has the greatest acidifying power of any preparation employed. It is a valuable agent in the treatment of cystitis, accompanied by the use of urotropin, which produces its best results in acid urine. The foregoing preparation is readily soluble in water, and may be given in doses of 30 (2.00) to 60 grains (4.00) every three or four hours if necessary.

Injections of Iodo-ether in Exophthalmic Goiter.

Abodie and Collon, in *Prog. Med.*, recommend the following combination as an injection in the treatment of exophthalmic goiter:

℞. Iodoformi 3i 4
Spts. etheris .....ʒv 150

M. Sig.: Fifteen minims injected into the enlarged gland every second or third day.

By this mode of treatment improvement was noted in the headache, polyuria and neuralgic pains as well as a reduction in the rapid heart action and the tremor.

Adrenalin and Atropin.

R. Mengelburg, in *Annals of Ophthal.*, lays great stress on the fact that a combination of adrenalin and atropin is liable to produce symptoms of atropin poisoning, even in very small quantities. In several cases, although no idiosyncrasy to atropin was present when given alone, marked effects were produced by combining the two. His explanation is that through adrenalin the vessels of the mucous membrane of the canaliculus are much contracted and consequently the mucous membrane is made much thinner and the canal more patent, and in this way a larger opening is made through which the atropin can pass into the tear duct and from thence into the nose. He, therefore, advises extreme caution in using this combination.

Symptomatic Treatment of Phthisis.

The principal symptoms to be considered in the symptomatic treatment of phthisis, according to *The Pract.*, are the cough, night-sweats, occasional pains in the chest, digestive disturbances and hemoptysis.

COUGH.

In treating the cough it must be kept in mind that to a certain extent it is a salutary measure in that it tends to expel from the lungs a certain number of bacilli and other products. As a sedative for the cough at night the following combination is recommended:

℞. Liq. morphinæ .....gtt. iii 20
Vini ipecacuanhæ .....gtt. v 30
Oxymel scillæ .....gtt. xv 1
Theriacæ 3i 4

M. Sig.: At one dose for the cough, to be repeated as necessary.

Heroin may be substituted for the liquor morphin in the foregoing combination if preferred. In the early morning, if the cough is troublesome, much can be accomplished by the administration of some warm drink as hot milk or cocoa. During the day an inhaler may be used to advantage to check the cough and to disinfect the air passages. The following is of value as an inhalant:

℞. Olei eucalyptus
Spts. menthol
Spts. chloroformi, āā 3i 4

M. Sig.: Twenty to thirty drops to be inhaled three or more times through the day for half an hour or more each time.

THE NIGHT-SWEATS.

Tepid sponging at bedtime with an alcohol solution or vinegar water serves a good purpose, together with a drink of cold milk containing a little brandy. If this plan of treatment does not fulfill the needs the following pill should be given:

℞. Zinci oxidi ..... gr. ii-iv 12-.25
Ext. belladonnæ.....gr. ⅛-¼ 008-.015

M. Ft. pil. No. i. Sig.: One to be taken at bedtime.

Atropin sulphate gr. 1/100 (.0006) may be substituted for the foregoing, given hypodermically.

PAINS IN THE CHEST.

The pains are probably due to slight attacks of pleurisy. These may be relieved frequently by the application of some simple liniment or by painting the affected areas with iodin. The turpentine liniment proves effectual in most cases.

DIGESTIVE DERANGEMENTS.

It is of vital importance that the patient take as much nourishment as possible. To avoid digestive derangements a stomachic mixture such as the following is of service in improving the appetite and avoiding digestion:

℞. Tinct. nucis vom. 3i 4
Sodii bicarb. 3ii 8
Tinct. cardom. co. .....ʒss 15
Tinct. gentianæ co. q. s. ad.....ʒii 60

M. Sig.: Shake and take one teaspoonful three times a day.

If the digestion should then become disturbed the fatty materials should be cut down, give rest in bed and increase the elimination by the bowels by means of small doses of calomel.

DIARRHEA.

The diarrhea in phthisis may be simply due to overfeeding or otherwise to organic lesions in the alimentary tract, such as tubercular ulceration or amyloid disease. In the former instance a milk diet should be temporarily resorted to, and if

there are organic changes a starch and opium enema may be of use or the following combination given by the mouth:

℞.	Plumbi subacetatis	gr. ii	12
	Liq. morphinæ	m. v-x	30-.65
	Acidi acetici dil.	m. x	65
	Aq. chloroformi	ʒi 4	

M. Sig.: At one dose, to be repeated three times a day; or:

℞.	Bismuthi salicylatis	gr. xx	1
	Sodii bicarb.	gr. xv	1
	Mucil. acaciæ	gr. x	65
	Aq. menth. pip.	ʒi 4	

M. Sig.: At one dose, to be repeated once or twice daily.

HEMOPTYSIS.

If necessary to check hemoptysis a hypodermic injection of morphin gr. ⅛-¼ (.008-.015) is probably the best treatment to quiet the patient and soothe the heart's action, which in turn aid in checking the hemorrhage. The patient should be instructed to lie quietly in bed, not speaking to anyone or even turning in bed. No food should be given for six or eight hours, when it should consist of cold or iced milk. Thirst may be relieved by sucking cracked ice. Ergot is not recommended on account of its tendency to raise blood pressure.

Calcium chlorid, gr. x-xx (.65-1.30), may be given to increase the coagulability of the blood. Turpentine is of value given as follows:

℞.	Spts. terebinthinæ	ʒss	2
	Mist. amygdalæ	ʒii	8

M. Sig.: At one dose.

If syncope should occur a teaspoonful or more of brandy should be given as a slight stimulant. The after-treatment of hemorrhage consists in correcting the anemia with preparations of iron.

Some authors recommend the following combination to check pulmonary hemorrhage:

℞.	Stypticin	gr. i	.06
	Plumbi acetatis	gr. ii	12
	Pulv. digitalis	gr. i	.06
	Pulv. opii	gr. ss	.03

M. Ft. cap. No. i. Sig.: One such every four hours.

Aqueous Preparations of Menthol.

M. Cresantignes, in *Jour. Amer. Med. Soi.*, has found menthol to be a valuable anti-emetic given in an aqueous solution without the addition of a large amount of alcohol. To prepare an aqueous solution he recommends the following formula:

℞.	Menthol	gr. v	.30
	Tinct. quillajæ	ʒi	30
	Aq. destil.	ʒv	150

M. By dissolving the menthol in the tincture, add a small amount of glycerin and then add to the water in small quantities at a time. Sig.: Shake well and take two teaspoonfuls at a dose. Several teaspoonfuls may be taken at a time if necessary as the amount of menthol in each teaspoonful is very small. For external application the following combination is recommended:

℞.	Menthol	ʒv	20
	Tinct. quillajæ	ʒiii	12
	Aq. destil.	ʒviss	200

M. Sig.: To be applied as a wet compress for a few minutes at a time, followed by a compress of fresh water.

And as a gargle and mouth wash the following is recommended:

℞.	Menthol		
	Tinct. quillajæ, āā	ʒi	4
	Solutionis acidi borici (saturated aqueous)	ʒvi	180

M. Sig.: To be used as a gargle or mouth wash.

Employment of Heart Tonics Before an Anesthetic.

To overcome any cardiac enfeeblement which occurs in many patients previous to undergoing an operation, Feilchenfeld of Berlin, according to an abstract in *Medicine*, administers six drops of the tincture of strophanthus for two or three days preceding the operation. According to his statements too much stress is laid on the presence of valvular lesions and not sufficient attention given to the action of the heart. In individuals who are nervous and whose cardiac action tends to run up on slight provocation or where marked feebleness of pulse is shown, the administration of strophanthus or some similar heart tonic prior to an operation is very advantageous and important.

Medicolegal.

SOME LEGISLATION OF THE YEAR 1903.

Connecticut—Obtaining Treatment by False Pretenses.—Chapter 27 of the Public Acts of Connecticut of 1903 provides that any person who obtains medical or surgical treatment from any dispensary located in the state on false pretenses or representations as to his place of residence or as to his pecuniary circumstances shall be fined not more than $50.

Connecticut—Licenses of Other States—Re-examinations.—Chapter 71 of the Public Acts of Connecticut of 1903 amends section 4715 of the general statutes, on requirements for obtaining certificate of registration, adding the provision that any one of the examining committees appointed under the provisions of section 4716 may accept the license of any state examining board in lieu of an examination, provided the applicant shall present satisfactory evidence (1) that such license has been issued after an examination of as high a grade and of the same kind as required in Connecticut; (2) that he is a resident of Connecticut, or that he intends to permanently reside therein; (3) that he has been in actual practice for at least six months in the year immediately preceding his application, and (4) that he is of good moral character and professional standing. The fee will be $15. Section 4718 of the general statutes, relating to examinations, etc., is amended by striking out the words: "An applicant, rejected by an examining committee, shall not be eligible to re-examination until after the expiration of twelve months," and inserting in lieu thereof the following: "An applicant rejected by an examining committee shall not be eligible to examination before either of the other examining committees until after the expiration of twelve months, but may be re-examined by the committee before whom he appeared, at any subsequent meeting of said committee."

New Hampshire—Prohibits Spitting in Public Places.—Chapter 2 of the Laws of New Hampshire of 1903, entitled "An act to promote cleanliness and to protect the public from the disease commonly known as consumption," provides, among other things, that it shall be unlawful for any person to spit on any sidewalk, in the compact part of any city, village or town, or in any railway station, hall or other public place, or in any street or steam railway car other than smoking cars, except into spittoons or other receptacles provided for that purpose.

New Hampshire—An Act in Relation to Smallpox.—Chapter 45 of the Laws of New Hampshire of 1903 provides that it shall be the duty of every physician who attends any person whom he suspects is infected with smallpox to immediately report the same to the health officers of the town in which said person then resides, or if there be no health officers, then to the selectmen of the town, who shall immediately quarantine such person, and if there be doubt whether such person is suffering from smallpox, then said health officers or selectmen shall immediately notify the state board of health and request it to investigate the case immediately. If any physician, health officer or selectman neglect so to do he shall be fined the sum of $100.

New Hampshire—College Course to Count One Year.—Chapter 115 of the Laws of New Hampshire of 1903 amends section 7 of chapter 63 of the laws of 1897, entitled "An act to regulate the licensing and registration of physicians and surgeons," by adding at the end of the fourth requirement, which is that the candidate has studied medicine not less than four full school years, the provision that the regent shall accept "as the equivalent of the first year of the fourth requirement evidence of graduation from a registered college course; pro-

viding that such college course shall have included not less than the minimum requirements for such admission to the second year of a medical school registered as maintaining at the time a satisfactory standard."

New Hampshire—Sanatorium Treatment for Indigent Consumptives.—Chapter 184 of the Laws of New Hampshire of 1903, a joint resolution, authorizes the state board of charities and correction to send such indigent consumptive patients as are suitable for remedial treatment to a sanatorium for treatment, the board to pay for the care, treatment and support of such patients only the actual cost of their maintenance in the sanatorium. Persons in indigent circumstances, who themselves or by their relatives are able to pay part of the cost of maintenance, may be admitted to the sanatorium and maintained and treated therein at the expense of the state to that extent that they can not, by themselves, or relatives chargeable therefor, pay such cost of maintenance, when the state board of charities and corrections so certify and stipulate the proportion the state will assume and pay.

New Hampshire—State to Care for Dependent Insane.—Chapter 61 of the Laws of New Hampshire of 1903 provides that the state, from Jan. 1, 1909, shall have the care, control and treatment of all insane persons now cared for by the various counties; and no county shall hereafter establish any asylum or other additional structure for the insane, nor after said date maintain any institution for the insane, or be liable for the board, treatment, care or act of any insane person. From and after the passage of this act, the state board of lunacy may order the removal of all such dependent insane persons to the state hospital for remedial treatment as in their judgment seems proper, and such persons shall be supported at the expense of the state. After Jan. 1, 1905, as rapidly as accommodations can be provided, the state board of lunacy shall transfer from the various county almshouses to the state hospital such insane persons as in their judgment seem most suitable, such transfers to be made pro rata to the population of the several counties.

New Hampshire—Creates Office of Medical Referee.—Chapter 134 of the Laws of New Hampshire of 1903 provides that the governor shall nominate and, with the advice of the council, shall appoint in each county from one to three able and discreet men, learned in the science of medicine, to be medical referees in such county as they shall reside, who shall hold the office for a term of five years, subject to removal at any time for cause. When a medical referee has notice that there has been found or is lying within his county the dead body of a person who is supposed to have died by violence or unlawful act, he shall take charge of the same, and if, on view thereof and personal inquiry into the cause and manner of death, he deems a further examination necessary, he shall notify the county solicitor of the county, and on being authorized by the solicitor in writing, shall make an autopsy in the presence of two or more persons, one of whom shall be a physician whose attendance he may compel by subpena if necessary, and shall reduce, or cause to be reduced, to writing every fact and circumstance tending to show the condition of the body and the cause and manner of death, with the names and addresses of the witnesses giving evidence. If on such view, with personal inquiry or autopsy, the referee is of the opinion that the death of the person was caused by violence, criminal or otherwise, he shall at once notify the attorney-general and the county solicitor. He must also make return of the death to the city or town clerk. With the advice and consent of the attorney-general or county solicitor, he may, if he deems it necessary, call a chemist or other expert to aid in the examination of the body or of substances supposed to have caused or contributed to the death. The fees to be allowed shall not exceed, for a view and inquiry without autopsy, $5; for a view and autopsy, $25; and mileage. When it is deemed necessary by the medical referee and county solicitor to have a physician or surgeon present at an autopsy as one of the witnesses, such physician or surgeon shall be allowed a reasonable compensation to be audited by the medical referee and county solicitor.

Current Medical Literature.

AMERICAN.

Titles marked with an asterisk (*) are abstracted below.

New York Medical Journal.

November 7.

1 *The Dwarf Tapeworm (Hymenolepis Nana), a Newly Recognized and Probably Rather Common American Parasite. Charles W. Stiles.
2. The Operative Treatment of Chronic Bright's Disease; a Second Communication, Based on Reports of 120 Cases. (To be concluded.) Ramon Guiteras.
3 *The Importance of the Physical Examination of the Abdomen as a Routine Practice Irrespective of What Be the Symptoms. Mark I. Knapp.
4 *Deep Breathing Richard C. Newton.
5 *Some Points in the Treatment of Hip-joint Disease. George B. Packard.
6 Some Principles on which is Based the Therapeutics of Electricity in Nervous Diseases. A. D. Rockwell.

1. Dwarf Tapeworm (Hymenolepis nana).—Stiles describes this parasite, and thinks it is more common in this country than is generally supposed. He has had probable evidence of its occurrence in various portions of the southern states and as far north as Washington and Philadelphia. Infection, he thinks, takes place through the infection of food by rats and mice, and, while as a local parasite the symptoms may be slight, the animal possibly possesses a toxin that plays a considerable part in producing serious infectious symptoms in certain cases. The diagnosis is somewhat difficult on account of the smallness of the parasite and the minute portions evacuated. The best method is to examine microscopically and find the characteristic eggs. The only drug that is of use in its treatment is male fern. Prophylaxis consists in cleanly personal habits; keeping mice and rats away from the food supply, and if a person is found to have the dwarf tapeworm he should sleep alone until he is rid of it.

3. Physical Examination of the Abdomen.—Knapp insists on the importance of thorough examination of the abdomen, and describes the methods of palpation and inspection.

4. Deep Breathing.—Newton sums up his paper in the following after showing the evil consequences of the practice of shallow breathing:

1. Deep breathing is essential to good health, and is in many cases a valuable therapeutic measure.
2. Its importance is not at all generally appreciated.
3. It should be a part of every child's education.
4. It is especially indicated for backward and sickly children.
5. The profession owes it to itself to study more deeply this vital question and to be able to instruct the laity fully on all its bearings.

5. Hip-Joint Disease.—The importance of allowing some functional use of the affected member in case of hip-joint disease is pointed out by Packard. He thinks that a certain amount of exercise should be employed as early as possible, and that this is preferable to the common practice of prolonged fixation and disuse. He suggests other points and insists on favorable surroundings, good hygienic conditions, diet, treatment of anemia, etc., as may be necessary.

Medical News, New York.

November 7.

7 *Mastoid Disease and Extradural Abscess. Seymour Oppenheimer.
8 *Precipitins and Their Medicolegal Use. (To be continued.) James Ewing and Israel Strauss.
9 *A Study of Immunity. Ehrlich's Side-chain Theory. F. M. Pottenger.
10 Report of a Case of Acute Glaucoma Incited by the Use of Euphthalmine for Diagnostic Purposes. Henry W. Ring.
11 Circular Laceration of the Cervix Uteri. Hugh Crouse.

7. Epidural Abscess.—Oppenheimer discusses the relation of mastoid disease and extradural abscess, the usual etiologic rationale being based on the thin wall separating the lining membrane of the mastoid cells from the meninges becoming necrotic. There may be other pathologic elements such as tuberculosis, etc. Epidural abscess is the most frequent intracranial complication of mastoid empyema, and may be the cause of the sinus infection or development of a brain abscess. Picqué and Ferrier claim that more than one-half of all the cases of epidural abscess arise from mastoid disease. The two most common sites for the development of pus collection are: (1) In the posterior fossa near the vertical

portion of the groove for the lateral sinus, and (2) in the middle fossa on the superior surface of the osseous tissue forming the roof of the antral cavity. If the mastoiditis travels backward the perforation will probably be through the thinner tissue above mentioned, while in some cases the tendency is upward and inward, and the abscess develops in the middle cranial fossa. The dangers are greatest when close to the sinus on account of the tendency to secondary inflammation and thrombosis. The symptoms may be non-characteristic, but if the local meningitis becomes sharply defined it may become of diagnostic import. In uncomplicated cases pyrexia is very slight or absent, as a rule. There may be headache and other subjective symptoms. When the abscess is extrasinuous there is generally a rise of temperature, and if aural disease will not account for the condition, intracranial complication should be suspected. If there is a high temperature at the beginning and other symptoms indicating epidural abscess, a complication of sinus thrombosis may be looked for. If the temperature is not high enough to suggest either thrombosis or meningitis, the question of cerebral abscess will have to be considered, but the absence of localizing signs and of subnormal temperature will aid in eliminating this factor. Localizing symptoms may occur from pressure on the brain, and head pain is one of the most constant and valuable symptoms, and is often limited. The pulse rate varies with the degree of associated meningeal irritation. Rigors are rarely present, and if they occur suggest a sinus complication. Optic neuritis is rarely found. Vomiting may occur with exacerbation of pain, also vertigo, but these latter have little diagnostic value. Under the best conditions the diagnosis is indefinite, and in many cases the surgeon can not determine the presence of pus before operation. The lack of high temperature, rapid pulse, irritability, etc., separate it from meningitis, as a rule. If the diagnosis is still in doubt in the presence of meningeal symptoms lumbar puncture should be performed. If it gives negative results, epidural abscess or sinus phlebitis, or both, are probably present. A bone fistula connecting with the cranial cavity is an indication of abscess, and a doughy swelling behind the meatus is significant. Cases are reported and a bibliography given. The infection in these instances was polymicrobic. The termination of an epidural abscess, if not recognized, will depend on the direction it takes in the destruction of tissue. It may point downward and spontaneously evacuate, but, ordinarily, neglect is dangerous. In recognized cases the prognosis as regards cure is favorable if the abscess is evacuated. No other treatment than surgical release of the purulent collection is to be considered.

8. **Precipitins.**—Ewing and Strauss' article is largely a critical historical summary of the facts from the literature. They, however, give briefly the results of some experiments on the changes in precipitin substances and the specificity of precipitins recognized. They find that in order to obtain the specific reaction in the human blood free from the danger of error from the personal equation they had to dilute antisera from the rabbits in their experiments, at least 1 in 30, and require a flocculent precipitate within three hours at 37 C. (This article is to be continued.)

9. **Immunity.**—Pottenger's article contains nothing specially new.

American Medicine, Philadelphia.

November 7.

12 *The Treatment of Puerperal Sepsis. E. E. Montgomery.
13 *Hyaline Bodies in Tumors and Kindred Other Conditions. Randle C. Rosenberger.
14 Empyema. I. R. Trimble.
15 *Obstipation: Its Causes, Effects and Treatment. John L. Jelks.
16 *Nostalgia and Melancholia in the Tropics. E. S. Corson.
17 Case of Post-typhoidal Infection of a Rib. Alfred I. Ludlow.
18 A Study of School Hygiene, Development of Children and Preventive Medicine. Alice M. Smith.

12. See abstract in THE JOURNAL of October 31, p. 1105.

13. **Hyaline Bodies in Tumors.**—Rosenberger has observed these bodies in malignant and benign tumors, in juice as well as in stroma, and sometimes within the cells, and describes their appearance. He quotes at length from the literature, and his conclusions are as follows:

It is seen from the specimens studied that these bodies were observed with great regularity.

They were in most cases quite deeply situated in the tissues, while a great many more were seen intracellularly.

Some of them gave quite a typical reaction of amyloid material, while the greater number failed to give this reaction. Treating them with dilute hydrochloric acid failed to produce effervescence.

It seems to me that they correspond most closely to the fuchsin bodies described by Russell, and that they really represent some degenerative change occurring in the cell or cell nucleus. That they play some part in the etiology of the conditions in which they are found seems doubtful, notwithstanding the fact that they are found deeply situated and intracellular. They do not possess the peculiar intracellular characteristics which Plimmer's bodies do, being distinctly hyaline. They may, however, represent a hyaline or amyloid degeneration of blastomycetes.

The fact that cultures were not obtainable in any case on various media and the failure to demonstrate true budding seems almost positive proof that they are not blastomycetes.

15. **Obstipation.**—Jelks calls attention to the various causes of obstipation, especially the extravisceral, including conditions of the uterus, prostate, etc.; perivisceral, such as cicatrices, tumors; visceral, including volvulus and neoplasms, and intravisceral, including intussusception, foreign bodies, fecal impaction and valvular obstruction. Each of these possibilities is briefly mentioned, the latter more at length. He thinks obstruction by Houston's valves is prolific of more trouble than all the other causes together, but he wishes to insist on the importance of recognition of the fact that other causes also may be considered.

16. **Nostalgia in the Tropics.**—Corson finds that the isolation and monotony, the depressing conditions of climate and the attacks of special diseases of the unacclimated persons in the tropics are conducive to homesickness and melancholia. He suggests frequent change of residence, sanatoria at high altitudes, prevention of self-medication and return home where practicable. He sums up thus:

Americans, owing to their strenuous mode of living and the depressing conditions of the tropical climate, are especially liable to nostalgia and melancholia.

Persons suffering from nostalgia should be watched, and when it is complicated by melancholia they should be advised to return home at once.

Sanatoriums at high altitudes, if not already provided, should be exploited at once for the recruiting of the health of soldiers and civilians. Only the government can do this.

An especial effort should be made to educate all persons residing there as to the best methods of living for the preservation of health.

Boston Medical and Surgical Journal.

November 5.

19 *On Gastric Tetany. B. G. A. Moynihan.
20 *A Study of Pathologic Fermentation in the Stomach. Henry F. Hewes.
21 *Internal Medicine, to What Extent Required or Elective in the Medical Course. S. G. Bonney.
22 *Observations on the Iodin Reaction in Children. Charles H. Dunn.

19. **Gastric Tetany.**—Moynihan reviews the symptoms and the theories of the cause of this condition, giving most favor to the auto-intoxication theory as being most in accordance with the facts observed. The possible reflex action from sensory stimulation of the stomach nerves may also have its part. The connection of gastric tetany with the condition of the kidneys is a matter also to be studied. The fatality of the disease is especially noted. It occurs so late in the conditions which give it rise that it is generally hopeless. Earlier adoption of surgical measures in chronic gastric ulcer, pyloric stenosis, etc., in the late stages of which tetany appears, would probably prevent its occurrence in many cases.

20. **Gastric Fermentation.**—Hewes has studied the conditions of gastric fermentation in a case which is reported in full, and finds four bacterial types existing which he thinks are responsible for the pathologic condition. They were as follows: (1) A coccus growing in small white colonies on the gelatin; (2) a short bacillus growing in small white colonies and giving evidence of gas formation on the gelatin; (3) a long bacillus growing in large creamy white colonies and liquefying the gelatin; (4) an organism growing in white colonies and answering to the morphologic characteristics of the sarcinæ ventriculi. These were observed only once. He has isolated all these in tube cultures. The first three produced alcohol and gas (CO_2) and some form of organic acid at some stage in the fermentation. It does not follow that these are the sole causes, but he thinks that future investigation of the subject, consisting in the identification and study of these

bacterial ferments, may give further results which will be reported in another article.

21. This article was abstraced in THE JOURNAL, xl, p. 1602.

22. **The Iodin Reaction in Children.**—This reaction, which was described by Cabot and Locke (see abstract in THE JOURNAL of Feb. 22, 1902, p. 519), has been tested on the blood of children in the Children's Hospital at Boston, and the results are given. Dunn finds that it is always present, usually of average, and often of marked, intensity, a high percentage of cells being affected, in the following conditions: Lobar pneumonia, bronchopneumonia, cerebrospinal meningitis, influenza, empyema, non-tubercular suppuration, and also in single cases of appendicitis, diphtheria and starvation. It is usually present in typhoid fever and miliary tuberculosis, but may be absent, and it may be present or absent in anemia. It is usually absent, but may occur in nephritis, cardiac valvular disease and tuberculosis. It is absent in pleurisy with effusion, functional indigestion, rachitis, articular rheumatism, congenital cardiac diseases, chorea, infantile atrophy, and was never encountered in single cases of bronchitis, eczema, purpura, urticaria and scorbutus.

Medical Record, New York.

November 7.

23 *Surgical Interference in Hypertrophic Biliary Cirrhosis of the Liver. Julius Rosenstirn.
24 *Filariasis in Porto Rico. Bailey J. Ashford.
25 Treatment of Cancer of the Uterus. I. L. Watkins.
26 *Investigation of Rinderpest. J. A. Guthrie.
27 Some Practical Points Taught by the Discovery of B. Dysenteriæ in the Stools of Infants Suffering from Summer Diarrhea. Louis M. Warfield.
28 *Hemospermia, with Report of a Case. Arthur L. Chute.

23. **Talma's Operation.**—Rosenstirn reports two cases. In the first an erroneous diagnosis of adenoma of the liver was the reason for the laparotomy. When the true nature of the hepatic cirrhosis was discovered, the omentum, gall bladder and liver were sewed up to the parietal peritoneum with good results. The second case was one of Hanot's cirrhosis; the operation planned deliberately and the condition of the patient fully reported. The results were also good in this case. The theory of the relief of obstruction of the blood circulation being not sufficient in explaining the effect of the operation in this latter case, Rosenstirn suggests the possibility of the deficient neutralization of toxins by the liver as a cause of the disorder. It is possible, he says, that there is in this disease primarily a hypertoxicity of the blood which, passing through the liver, causes new tissue growth, and the liver is unable to cope with the conditions. Obstruction in the biliary canaliculi and the consequent retention of the bile may furnish a special avenue for the toxins to reach the cardiac circulation, so that they can not be successfully fought except by establishing another more round-about method of circulation, which is furnished by this operation.

24. **Filariasis in Porto Rico.**—Ashford has observed the incidence of this condition in Porto Rico, and concludes that at least about 10 per cent. of the people are affected. He reports cases in the mounted battalion of the Porto Rican Provisional Regiment, showing that about 12 per cent. of the soldiers were thus affected, presumably before their enlistment. In 5 cases there was strong presumptive proof of this in the families; all had been exposed; all were young men; most of them three years in the service without serious illness, and they were from all parts of the island. All but 4 had had attacks of inguinal or femoral adenitis with chills, fever, pain and a red line in the inner aspect of the leg and thigh at varying intervals. Six had had chyluria. He thinks the people living in the crowded districts in Porto Rico are liable to the infection, and sleeping out of quarters is dangerous. While the disease perhaps is not often followed by very serious consequences, yet it is a serious menace to the subject.

26. **Rinderpest.**—Guthrie has observed the methods of inoculation immunization of cattle against rinderpest as practiced in Hong Kong by those supplying the carabao for the United States government at Manila. He finds that the disorder corresponds almost exactly in its type with acute dysentery in the human being. The inoculation is a simple one: 10 c.c. of virulent blood from another bullock with the disease in progress and 50 c.c. of prepared serum from an inoculated animal are injected. The inoculation is repeated in five days, sometimes in less time; sometimes two or three extra injections are given. It is hoped that by continuous working in this way an immune breed of cattle will be produced.

28. **Hemospermia.**—This condition of the ejaculation of blood-stained seminal fluid is an uncommon one. It is not in itself a disease, and usually gives more trouble to the possessor than it should, and may occur in the various disorders of the genito-urinary organs, or sometimes without any pre-existing affection. A case is reported by Chute and a number of others are cited from the literature. The prognosis varies with the nature of the lesion. In most instances it is due to chronic inflammatory lesions of the posterior urethra, prostate or seminal vesicles. The prospect for recovery is usually good; of course, if due to malignant disease the prognosis is bad. The treatment should be directed to the causative lesions. Massage is often a very important adjunct in inflammatory cases. The only case he finds on record in which treatment failed is one connected with the hemorrhagic diathesis.

Cincinnati Lancet-Clinic.

November 7.

29 *Injuries of the Spine and Their Treatment. John C. Oliver.
30 *A Report of the Principles of Diagnosis and of Medical Malingering. John Punton.
31 Surgery of the Prostate, Pancreas, Diaphragm, Spleen and Thyroid. (Continued.) B. Merrill Ricketts.

29. **Injuries of the Spine.**—The statistics of the Cincinnati Hospital, and also the cases in his own private practice, are reported by Oliver, who insists on the importance of early operation in all cases where any evidence of activity on the part of the spinal cord exists. Good results where total abolition of function is present are not to be expected. The mortality is considerable, either with or without operation, and the majority of the patients remain paraplegics. Operation offers the only means of correctly demonstrating the condition. It may be successfully performed, he says, at a much later period than that formerly thought possible.

30. See THE JOURNAL, Oct. 24, p. 1041.

St. Louis Medical Review.

November 7.

32 Some Remarks About the Climate of the Southwest, and the Treatment of Tuberculosis. B. F. Stevens.

Journal of Nervous and Mental Diseases, New York.

November.

33 *Three Cases of Tumor Involving the Spinal Cord; Treated by Operation. James J. Putnam and J. W. Elliott.
34 *A Method for the Relief of Pain in Tumors of the Brain. William Browning.
35 *Triceps, Biceps and Finger Clonus. Theodore H. Weisenburg.
36 *Studies on the Cerebral Cortex in the Normal Human Brain and in Dementia Paralytica. (Continued.) G. Alfred Lawrence.

33. **Spinal Tumors.**—The first case reported by Putnam and Elliott was that of a young man who had, as a sequel to an accident, a tumor in the cerebrospinal region at the level of the second and third cervical vertebræ, which caused paralytic involvement of all four limbs, of the costal muscles and even of the diaphragm. An operation was performed, and a tumor the size of an acorn, which was, pathologically, identified as a giant-celled sarcoma, was removed. The condition improved rapidly after operation, but suffered a partial relapse, and then a recurrence of improvement, so that at the present time the patient is in active life, and claims to be steadily gaining. There is a spasticity of gait and some restriction of the rotation of the head and considerable reflex excitability. It is noted as the first instance in which an operation has been performed for tumor at this level, and is important as showing what can be done even in so malignant a type as sarcoma and how long the tendency to recurrence can be delayed. The second operation was one for carcinoma of the last dorsal and upper lumbar vertebræ. It was decidedly relieved by operation, but the patient finally succumbed several months afterward. Both the patient and her husband admitted that there was a marked relief from pain after the operation

had been performed. The third case was one of fibrosarcoma in the lower cervical region encircling the cord and dura. A dissection was made and the growth removed. The dura was penetrated in one place and a large amount of cerebrospinal fluid escaped. The patient died five days after the operation.

34. **Brain Tumors.**—The method for the relief of pain here suggested by Browning consists in the administration of such depressants as aconitia, veratrum or gelsemium in doses sufficient to control the pulse, thus relieving, he claims, the intracranial blood pressure. It can not in every case and at all times stop pain, but it relieves it, and will often be all that is required for this purpose, even though the condition has existed for many months. He believes the classes of cases that it is likely to relieve are those where there is more or less general increase of the intracranial pressure, which occurs most typically in intrasubstantial growths. The pain is less intense, but more continuous. It may be still more useful in cases where there is paroxysmal augmentation of the arterial pressure with terrific pain seizures. Where, on the other hand, the pain is the result of the direct implication or stretching of the external structures, as the meninges and outgoing nerves, we have neuralgia and localized pain, and the good to be realized from depressants may be only proportionate to the amount in which the pressure is the factor. As far as he has observed in his practice with this method, no injurious effect has been produced on the course of the trouble itself. If anything, the life has been prolonged. The tendency to brain hemorrhage which exists in some of these cases is also favorably influenced by treatment. In cancer cases the use of depressants may also have a diagnostic value.

35. **Triceps, Biceps and Finger Clonus.**—These peculiar reflexes are not noted in many works on nervous diseases, and Weisenburg therefore calls attention to their occurrence. He has seen triceps clonus in a general paralytic; still more typical in hemiplegia in an alcoholic case. In this case there was also biceps clonus. Finger clonus was observed in a case of right-sided hemiplegia of long standing.

36. **Paresis.**—Lawrence's article is continued. The installment in this issue is entirely given to the pathologic findings.

The Laryngoscope, St. Louis.

October.

37 *The Technic of Maxillary Sinus Operations. H. Holbrook Curtis.
38 *The Arch of the Palate. Henry L. Swain.
39 *Cicatricial Deformities in the Respiratory Tract Due to Causes Other than Syphilis and Traumatism. G. Hudson Makuen.
40 Subglottic Tumors of the Larynx. Richard H. Johnston.
41 The Inefficiency of the Wilde Incision. J. Morrison Ray.
42 New Laryngeal Instruments. Seth Scott Bishop.

37. **Maxillary Sinus Operations.**—Curtis goes at considerable length into the various operations for antral diseases. He favors the Luc-Caldwell operation as in many respects most satisfactory, but he also describes the operation through the inferior meatus, which has the advantage of requiring no anesthetic. It is performed by first cocainizing the inferior turbinate, cutting away its anterior third and bringing into view the outer wall of the meatus. He then makes a perforation with a trephine at a point a quarter of an inch above the nasal floor. As soon as the wall is perforated the trephine is changed for an olivary or barrel burr drill, enlarging the orifice upward, downward and backward. He then stuffs in some gauze wet with adrenalin solution to stop the bleeding, and by using properly curved, flexible ring curettes can reach the wall of the antrum very satisfactorily. He prefers the trephine for its ease in entering the wall of the meatus. He says he would favor a permanent drain for this region, since it can be useful whether the disease is local or connected with that in other diseased cavities. The article is fully illustrated.

38. **The Arch of the Palate.**—Swain has investigated the growth of the arch of the palate in a number of skulls, including those of Flathead Indians. His theory as to the cause of the arch is that it grows down with the growth of the skull. Nasal stoppage and mouth breathing tend to raise it by checking this growth. He says from a personal study we may conclude that it has been demonstrated:

1. That it is possible by deforming processes which artificially alter the shape of the skull to produce a change in form and shape of the hard palate. 2. That under these above-mentioned conditions the septum seems to conform itself to the altered development of the rest of the face, rather contrary to our previous ideas regarding the habits of this structure. 3. That if from arrested or retarded development of the superior maxilla, the palate fails to descend to its proper level, a bent septum is as liable to be produced as when the palate is arched too greatly by an unnatural narrowing process. Hence a palate of perfectly normal height as compared to breadth may produce a bend in the septum. 4. That in considering the various causes which produce the abnormalities of the palate, we must lay more stress on the lack of proper aëration of the maxillary sinuses retarding their development, and hence that of the whole superior maxilla. 5. The conservation and general care of the deciduous teeth help to produce a normal horizontal curve in the hard palate and lessen the tendency to narrowing.

39. **Cicatricial Deformities in the Respiratory Tract.**—Makuen endeavored by correspondence to find out the frequency of such deformities due to other causes than syphilis and traumatism, and reports his results. He found that 300 observers have seen 449 cases of cicatricial deformities not due to these causes. That 16 per cent. of these were caused by diphtheria, 8 per cent. by scarlatina, 3 per cent. by lupus, 1.6 per cent. by tuberculosis and 1.5 by scarlet fever and diphtheria combined, with 1.1 per cent. by typhoid fever and .5 per cent. by measles. Other causes mentioned are membranous rhinitis, catarrhal erosion, smallpox, scleroma, septal abscess, erysipelas and pemphigus. These facts, he says, emphasize the importance of giving more careful attention to the nose and throat in the treatment of the above-mentioned diseases.

Archives of Otology, New Rochelle, N. Y.

October.

43 *On Hemorrhage from Arrosion of the Brain Sinuses in Suppuration of the Temporal Bones. H. Eulenstein.
44 General Sepsis in Chronic Suppuration of the Middle Ear, with a Central Perforation of the Drum. Professor Bezold.
45 *Cheesy Empyema of the Nasal Accessory Sinuses. Alfred Stieda.
46 Two Cases of Aneurism of the Arteria Carotis Cerebri. A. V. Zur-Mühlen.
47 On the Pathological Anatomy of Deafmutism. Dr. Schwabach.
48 *Recent Theories on Sound Conduction. Dr. Treitel.
49 Report on the Progress of Otology During the First Quarter of the Year 1903. Arthur Hartmann.

43. **Arrosion of Brain Sinuses.**—Eulenstein reports a case of mastoiditis following scarlet fever in which, in spite of early paracentesis, decay of the bone continued. The infection entered the cranial cavity, producing epidural abscess and corroding ulcer of the sigmoid sinus, perforation of which led to profuse and repeated hemorrhage. Direct plugging of the sinus was not sufficient, and he therefore shut off the blood current from below by tying the internal jugular vein, exposing the lateral sinus above its knee, and kept it compressed with the finger during the operation. He thinks he would recommend this method in other cases, not only to control the bleeding sufficiently, but also to control the primary affection thoroughly. He reviews the cases from the literature—18 in all, including his own.

45. **Cheesy Empyema of the Nasal Accessory Sinuses.**—Three cases are reported by Stieda in which large masses of cheesy material were removed from the nose. In one case there was almost a pure culture of bacillus coli in the mass; in others it was mainly amorphous material. He thinks that the other typical cases that have been reported in the literature, as well as his own, give evidence of the destructive nature of the caseous formation in these sinuses, and show that the process can be cured by drainage and thorough cleanliness.

48. **Sound Conduction.**—The criticisms of the Helmholtz theory of sound conduction are reviewed and passed on by Treitel, who discusses the literature. He thinks the attempts that have been made to overthrow this theory have not been altogether failures. The proofs as regards the method of resonance of sound waves are still unsatisfactory, and the very careful studies of Kleinschmidt and Zimmermann show that the resonance theory of the drum membrane of Helmholtz has become untenable. Moreover, from physical and physiologic facts, molecule vibrations must be admitted as

possible. If the molecular theory is correct, the middle ear mechanism is not absolutely necessary for sound conduction, but only for dampening loud sounds. The views are diverging also as to how the sound waves excite the fibers of the basilar membrane. It appears that this can be done by bone conduction alone, as in the case of loss of drum membrane and fixation of the stapes. He is in no doubt as to the value of Rinne's test in the diagnosis of ear diseases. Further research is still required to settle the questions that have been raised.

American Journal of Obstetrics, New York.

October.

50 *The Abdominal and Pelvic Lymphatics and Their Relationship to Cancer of the Uterus. W. Francis B. Wakefield.
51 *Conservative Surgery of the Female Pelvic Organs. Richard C. Norris.
52 Personal Experience with Alexander's Operation for Retroversion of the Uterus. H. Meek.
53 *Some Remarks on Retrodeviations of the Uterus. A. P. Stoner.
54 Repeated Cesarean Section on the Same Individual, with Report of Two Cases. George Haven and Ernest B. Young.
55 The Work of Downes' Electrothermic Angiotribe (Hysterectomies, Salpingo-Oöphorectomies, Carcinoma Mammæ, Epithelioma and Hemorrhoids). E. Gustav Zinke.
56 The Urinary Secretion; Its Obstetrical and Gynecological Considerations. Chauncey D. Palmer.
57 *The Mechanism of Occipito-posterior Positions; Does the Occiput Rotate Above or Below the Spine of the Ischium? Walter B. Gossett.
58 Gynecological Cases. W. E. Reed and E. K. Paine.

50. **Abdominal and Pelvic Lymphatics.**—Wakefield describes the anatomic structures and importance of these nodes in cases of malignant disorder. He insists on the importance of their thorough removal in cervical cancer, and sums up his general statements as follows: 1. The desiderata, in the order of importance, are: Removal of the uterus, removal of the parametric connective tissue, removal of the upper part of the vagina and removal of the regional lymphatics. Vaginal hysterectomy has no place as a curative operation in cancer of the cervix, and may be only palliative. The abdominal route, which should include the combined abdominal and vaginal, is the only one sufficiently radical to obtain the results that permit hopes of permanent results. He does not think any operation worthy of consideration that does not succeed in accomplishing at least the first three of these above-mentioned desiderata. The fourth will gradually grow out of the performance of the other three. The technical difficulties will, of course, be surmounted only by the experienced surgeon, and will not be popular even with him until with prolonged practice he has reduced the operation to a reasonable time limit and cut down the mortality rate. That operation will survive which permits the accomplishment of all the desiderata above mentioned with the least injury to the peritoneal structures, and at the same time affords the greatest protection to the ureter and important vessels.

51. **Conservative Gynecologic Surgery.**—While the results in Norris' total series of cases of surgery of the female pelvic organs are somewhat discouraging, generally speaking, and sometimes difficult to understand, very fortunate results have followed when he has carried conservative efforts to the extreme in some cases. No surgeon can predict the outcome. Future fertility depends more on the condition of the tube and success in restoring its caliber and integrity than on successful plastic work on the ovary. This latter rarely accomplishes the chief desire of the patient, namely, the relief from pain, and the patient who desires to be still fertile must be told that the preservation of the ovarian function may entail some condition of pain, often lessened, but still existing. Follicular cystic degeneration is very prone to be progressive. The age of the patient may help in deciding the case. A woman of 40 or more years of age, if she has children, should rarely be subjected to the risk of a second operation. The nervous temperament, recuperative powers, etc., have their influence. Women of strong nervous force and vigor, indifferent to pain, are the most favorable for successful conservative work.

53. **Retrodeviations of the Uterus.**—Stoner finds the shortening of the uterine sacral ligaments one of the most important measures in treating these cases. The following operation has been found by him so far satisfactory:

After freeing all adhesions and completing the necessary toilet of the adnexa, the uterus is brought strongly forward by the aid of a tenaculum forceps inserted in the fundus. This maneuver brings the uterosacral ligaments into prominence and each is transfixed, 5 or 6 cm. from its attachment to the uterus, with a needle carrying a medium fine silk ligature. Midway between the sutures and the uterus the ligaments are again pierced with a suture. After slightly relinquishing the hold on the tenaculum, traction is made on the sutures. The first or higher one is drawn downward toward the uterine attachment and anchored close to its origin to the uterus. The lower one is drawn upward toward the sacro-iliac junction and attached to its fellow. Thus the ligament is folded on itself as in Mann's operation on the round ligament. A 1-500 solution of bichlorid of mercury should be applied to the edges of the folds to destroy the epithelium and cause adhesion; but care should be taken to wipe dry any excess of the solution. The ligaments must be shortened only enough to place the cervix in an easy elevated position. To aid in folding the ligaments, hemostatic forceps may be used to advantage for grasping the traction suture close to the ligament. The operation is completed by whipping together the folds with fine catgut. The operation of itself is sufficient to hold the organ securely. However, as a matter of precaution, the round ligament should be shortened by one of the standard methods. No operation for the cure of this affection is complete, however, without due attention to all complications, such as damaged pelvic floor, lacerations of the uterus, endometritis, etc. Shortening the utero-sacral ligaments I believe to be an ideal method for the cure of retrodisplacement. The operation is simple and is usually easily accomplished. It is productive of no danger of bowel obstruction or pregnancy disorders, two very important points to consider in making up one's mind as to the best operative procedure.

57. **Occipito-Posterior Positions.**—Gossett holds that the occiput can not rotate forward after it passes posterior to the spine of the ischium. As the head descends in the R. O. P. position by the force of the uterine contraction it is first flexed to allow the head to enter the brim, substituting the sub-occipito-bregmatic diameter of the head for the occipito-frontal. The force of uterine contraction is transmitted through the vertebral column to the short pole of the fetal head, the occiput, producing more flexion. The head descends and the occiput, being the most dependent part, meets the resistance of the pyriformis muscle and soft parts which starts its rotation to the front, it rotating away from the point of resistance to that part of the pelvis where it has the least resistance, that is, to the right and forward. This is the beginning of the second step of labor in the R. O. P. position with a favorable termination, that is, the rotation of the occiput through three-eighths of a circle to the front. If the resistance of the pyriformis muscle and soft parts is not sufficient to start the rotation of the occiput to the front, then it will pass on down and fall behind the ischial spine and onto the right posterior inclined plane, following its direction, which is downward and inward to the hollow of the sacrum.

Annals of Surgery, Philadelphia.

October.

59 *A Case of Malignant Edema. Alfred H. Gould.
60 *Fatal Hemorrhage from Trephining. Joseph Ransohoff and A. V. Phelps.
61 *Notes on a Case of Fusiform Aneurism Treated by Matas' Method. Robert T. Morris.
62 On an Aggravated Case of Aneurism Racemosum. Carl Beck.
63 The Treatment of Aneurism of the External Iliac Artery by Digital Compression. Francis J. Shepherd.
64 *Calculous Anuria; Its Diagnosis and Treatment. Arthur T. Cabot.
65 *A New Method of Performing Perineal Section Without a Guide. Charles L. Gibson.
66 *A Clinical Contribution to the Knowledge of Tubercular Diseases of the Female Urinary Tract. Edward J. Ill.
67 *Contribution to the Surgery of Pyosalpinx. R. C. Coffey.
68 Congenital Luxation of the Ankle. Albert H. Freiberg.
69 Treatment of Complications Attendant on Chronic Gallstone Disease. John B. Deaver.
70 Tropical Abscess of the Liver. Ernest F. Robinson.
71 *Intestinal Localization. George H. Monks.
72 A Further Case of "Hour-glass" Stomach. John M. Elder.

59. **Malignant Edema.**—Malignant edema produced otherwise than by the Welch bacillus is rare. Gould has found only 5 cases in the medical literature, not one in the English language, and therefore the case he reports he thinks is of interest. There are 3 cases that are reported in addition to the 5 mentioned, but he considers the bacteriologic evidence insufficient. He describes the bacteriologic findings and the culture results.

60. **Hemorrhage from Trephining.**—The case of Ransohoff and Phelps was one of almost inevitable fatal hemorrhage. In using the electric fraise for the osteoplastic operation the bleeding from the bony canals was so excessive that the patient died on the table. The diploic canals were greatly enlarged, and whether another method would have had better

results is questionable. Posture of the head and compression of the carotids were without avail.

61. Aneurism **Treated by the Matas Method.**—Morris reports a case of fusiform aneurism in the popliteal region which was operated on by the Matas method of opening up and clearing out the clot and making a new arterial channel for the blood, with excellent results. As soon as the sutures were completed and the elastic bandage removed pulsation appeared and there was no leakage; the paralyses of sensation and motion which had resulted from the presence of the aneurism began to disappear. Sensation was well defined over the right leg and foot by the seventh day. On the twenty-second day there was still a little paralysis of motion in the anterior tibial region. The restoration of function is satisfactory.

64. **Calculous Anuria.**—Two cases are reported by Cabot. In the first the calculus was dislodged and forced on to the bladder by massage applied through the abdominal wall. He recommends this procedure as a frequent practice, though it should never lead to delay of operation during an uncertain period of diagnosis. In the second case the operation did not reveal a stone, but the subsequent history of the case showed that two small ones were washed out from the bladder with the Bigelow evacuator, and a large one crushed and pumped out under cocain anesthesia. Recovery was uneventful. The stones were evidently forced into the bladder by manipulation of the ureter during the operation.

65. **Perineal Section.**—The method here described by Gibson consists in using a rectal speculum and pulling down the prostate with a tenaculum, traction being exerted downward and somewhat backward. When median perineal section is performed the forefinger is introduced into the wound and as an assistant gently tugs on the hook one readily receives the sensation of the intermittent tension of the urethra in response to the traction on the prostate, thus guiding further incision. The danger of infection from puncture of the prostate through the rectal wall he thinks is minimal. In none of his cases has there been any such bad result. He does not recommend this as a routine operation, but it should be reserved for cases where there are unusual difficulties, a feeble patient, especially one with diseased kidneys or other complications. In septic states due to urinary extravasation, the very slight risk of infection (which, if it occurs, can easily be attacked through the existing perineal incision) may wisely be taken in order to increase the patient's chances.

66. **Tuberculosis of the Female Urinary Tract.**—Fourteen cases are reported and tabulated by Ill and their interesting points commented on. In only one case did the disease seem to have started in the bladder. The resistance to the tubercle bacilli of this organ seems to be so great that it will sometimes throw off the disease itself, as is demonstrated in his second case. Resection of the secondarily diseased portion is not necessary. Even the ureter may sometimes recover spontaneously, as is shown by another of the cases. He does not, however, advise leaving an infected ureter. He holds that these cases show that bladder tuberculosis is usually propagated by contiguity instead of by the blood current. Other cases show the possibility of recovery after long periods of time, as well as the rapidly fatal termination in some instances.

67. **Pyosalpinx.**—Coffey has developed from his experience a technic as follows:

After the abdominal incision has been made, first see if it is possible to push the intestines upwards towards the diaphragm, and hold them by packing in gauze sponges; second, seek the fundus of the uterus. Having made way to the uterus, gradually insinuate the finger along the posterior surface until the cul-de-sac has been reached. Carry a gauze sponge down between the fingers and the uterus. From this point of cleavage separate adhesions from the center as much as possible, gradually filling the space made with the gauze sponges. As fast as possible separate adhesions of the intestines and push them back towards the diaphragm until they are well out of the way and a thick wall of gauze sponges separates the field of operation from the general abdominal cavity. Now gradually separate the adhesions, holding down the tubes, and lift the uterus as high as possible with vulsellum forceps. . . . . The first step in the actual operation is to exsect the tube by a V-shaped incision in the cornu of the uterus. . . . . Follow this up with a continuous catgut until the V-shaped incision has been almost closed. Put down this needle and thread; lift the tube as high as possible; ligate the web or ligament of the tube in three or four different sections with catgut, as close as is consistent. A certain amount of comparatively healthy and active ovarian tissue may be found at the base of almost every ovary, no matter how cystic. Remove all the cystic portion, making, if possible, a V-shaped incision, which is to be closed with a very fine catgut. . . . . Now take up the needle and continuous catgut suture which has been used to close the V-shaped uterine incision, pass the needle through the peritoneum just external to the line of stumps, then the side of the uterus, then through the peritoneum, back to the side of the uterus, and so until the peritoneum forming the web or ligament of the tube has been brought in contact with the side and back of the uterus. After this has been done, it is found that the raw stumps are hidden and in contact with the back and side of the uterus. The ovary is suspended by its normal ligament under a roof made of the peritoneum of the broad ligament, and is thus protected from contact with the intestines above. The other tube and ovary are treated likewise. Owing to the fact that very many of these cases tend to retroversion of the uterus, I have supplemented this part of the operation by what I have called for want of a better name, posterior advancement of the round ligament, which is done by seizing the round ligament an inch or an inch and a half from its uterine attachment and bringing a knuckle backward to be stitched to the posterior and lateral surfaces of the uterus and broad ligament by a line of catgut sutures. This holds the uterus in its normal position. In the great majority of cases every raw surface may be covered up by this method. If there should be infection of the ovary or in the stump following the operation, there is but one place for an accumulation to take place, namely, in the cul-de-sac, where it will do the least possible damage and be most easily reached.

He holds drainage unnecessary except in acute cases, as the pus is generally sterile and when required it is better to drain through the cul-de-sac. He usually employs the compound drain of rubber tube and gauze as being the most satisfactory. The advantages of his method he sums up as follows:

1. Small mortality. 2. The covering of every raw surface with peritoneum as far as possible, and directed so that drainage will be into the cul-de-sac. 3. Future complications and adhesions are almost altogether prevented by exsecting the tube from the cornu by a V-shaped incision, suturing the incision with catgut and bringing the peritoneum of the broad ligament and the stumps in contact with the uterine body. This turns the ovary and raw surfaces into the cul-de-sac, sheltered by overlying peritoneum, and all broken areas are brought into the cul-de-sac within easy reach in case of infection of either the uterus or remaining ovarian tissue. 4. Owing to the tendency of the uterus to be drawn backward by adhesions, the posterior advancement of the round and broad ligament serves a valuable purpose. 5. No vessel is tied which under ordinary circumstances could cause fatal hemorrhage, even though all ligatures slip. 6. All the normal womanly functions can be kept up except childbearing in almost every case.

He believes the method a useful one in conservative surgery. The article is profusely illustrated.

71. **Intestinal Localization.**—Monks has studied on the cadaver the characteristics of the intestine at various distances from the duodenum, and gives his results. He utilized for differentiation the root of the mesentery, which springs from the posterior wall of the abdomen along a straight line six inches in length, starting above on the left side of the spinal column where the duodenum ends, and about on a level with the body of the second lumbar vertebra, continued obliquely downward and to the right, to end in a somewhat indefinite way at a point opposite the sacro-iliac synchondrosis. The circulation in this mesentery is one of the valuable points in the localization of the intestine. The arrangement of the main branches of the superior mesenteric artery is in primary and secondary loops; the former predominating and being more marked in the upper end, and the circulation becoming more complicated as we descend. There seems to be no fixed rule as to the length of the intestine. Age and sex have little to do with it. Where the intestine is very long he has sometimes found the mesentery also of unusual length, and the little straight vessels running from the mesenteric loops to the intestines much longer than the average. Where it is short he has also observed in a few cases that the mesentery and vasa recta were also short. The diameter of the gut is the greatest above, and gradually diminishes in size as we go down the tube. In the lower third or so the size remains the same throughout. The thickness is greatest in the upper part on account of the large and numerous valvulæ conniventes and the greater development of the muscle layers. It gradually gets thinner until within two or three feet of the cecum, where it thickens again. This thickening is presumably due to an increase in the muscular elements. The upper part is normally bright pink or red, showing numerous vessels. As we go down the tube the color changes to a gray or pinkish or yellowish gray and the vascularity is less marked. The valvulæ conniventes diminish in number as we go down, and about fourteen or fifteen feet from the end of the duodenum they

seem to disappear, and below this can seldom be seen or felt. The various parts of the intestine show foods in various stages of intestinal digestion. The consistency increases somewhat towards the lower end. It is hardly necessary to suggest that when one end of the loop, which is high up in the bowel, is gently pulled on and meets with resistance the loop is probably close to the duodenum, and likewise when one low down in the bowel meets with resistance the loop is probably a short distance from the ileocecal valve. The mesentery varies in thickness in the different parts. The thinnest part of the mesentery is that portion which is adjacent to the upper part of the intestine, and it becomes thicker as we go down the tube, largely owing to the deposition of fat. Its translucency varies immensely. Tabs of fat near the mesenteric border of the intestine are another guide, increasing toward the lower region. The direction of the stretched mesentery may also be a guide. Knowing the direction of the line of resistance, we get an approximate idea as to the part of the mesenteric root which resists; we can generally tell whether it is to the left or right. The more it inclines to the left from below upward, the nearer is the loop to the duodenum, and vice versa. These conclusions which he reaches are only approximate ones. He gives a fair average showing that he was within three feet of the true localization in about 75 per cent. of his estimations, and that the average was not out more than 2 feet.

Journal of Tuberculosis, Asheville, N. C.

October.

73 The Floating Sanatorium for Pulmonary Tuberculosis. Franz Michael and Hermann Maurer.
74 The Very Earliest Manifestations of Pulmonary Tuberculosis. J. H. Tyndale.
75 The Civil Aspect of the Tuberculosis Problem. Arthur J. Richer.
76 The True Therapeutic Action of Ichthyol in Pulmonary Tuberculosis. James Burnet.

Carolina Medical Journal, Charlotte.

October.

77 *Intubation. J. W. Long.
78 Methods to Hasten Epidermization, with Special Reference to Skin Grafting. Stuart McGuire.
79 Some Mistakes of a Country Doctor.

77. Intubation.—Long describes his methods of intubation, insisting on the importance of frequent practice on the cadaver before attempting it on a living person. He mentions one little point of invaluable assistance to him. As soon as it is felt that the end of the tube has entered the larynx pass the finger quickly into the esophagus. If the tube is properly engaged the posterior laryngeal tissue will be felt between the tube and the finger, and we know that the tube is not getting into the esophagus. With this assurance push the tube gently home, following it as one would an urethral sound, for here, as in the urethra, there is danger of making a false passage or other injury. This precaution of feeling the posterior wall of the larynx is not, he thinks, mentioned in any text-book, but it is of special value, for, if observed, many of the difficulties of intubation would disappear. He thinks it would be better to remove the string as soon as it is seen that the larynx tolerates the tube. Feeding the patient is sometimes difficult at first. The child can swallow better lying down or even with the head hanging low. Sometimes forced feeding with the tube will be required. Extubation is in some respects more difficult. Some operators leave the string, others use external pressure to push the tube out. He remarks that one of the physicians of a hospital in Philadelphia told him that he considered it favorable when the tube was coughed up as it avoided the trauma of extubation. As regards retained tubes he thinks the average time can be estimated in days rather than in months. Fortunately the necessity of keeping it in longer than the normal period is rare. A number of cases are reported, and the results were 11 lives saved out of 13, or a mortality of only 15.33 per cent., which can be greatly improved on. In fact, a 5 per cent. mortality may be safely taken as the average.

Journal of Comparative Neurology, Granville, Ohio.

October.

80 The Neurofibrillar Structures in the Ganglia of the Leech and Crayfish, with Especial Reference to the Neurone Theory. C. W. Prentiss.
81 On the Increase in the Number of Medullated Nerve Fibers in the Ventral Roots of the Spinal Nerves of the Growing White Rat. Shinkishi Hatai.
82 On the Medullated Nerve Fibers Crossing the Site of Lesions in the Brain of the White Rat. S. Walter Ranson.
83 *On the Density of the Cutaneous Innervation in Man. Charles E. Ingert.
84 On the Law Determining the Number of Medullated Nerve Fibers Innervating the Thigh, Shank and Foot of the Frog —*Rana virescens.* Henry H. Donaldson.

83. Cutaneous Innervation in Man.—From his studies of the nerve fibers in the anterior roots and estimates based on others' work, Ingbert concludes that about 79 per cent. of the medullated nerve fibers in the dorsal roots of both sides, or 1,032,730 fibers, go to innervate the dermal surface, and about 21 per cent., or 274,521, are afferent fibers distributed to the muscles and deep tissues. The afferent fibers of spinal ganglion origin passing in the *rami communicantes* are not separately considered here, but are classed with those passing to the skin. According to his estimate (using the skin areas for a large man), one cutaneous nerve fiber in the dorsal spinal roots innervates, on the average, 1.08 sq. mm. of the skin of the head and neck and 3.15 of the skin of the trunk. For each additional class of nerve fibers assumed we must increase the area proportionately. If we assume, with Foster, four classes of cutaneous nerve fibers, then each fiber will have to innervate on the average 4.32 sq. mm. of the dermal surface of the head and neck, and 12.6 of the dermal surface of the trunk. If there are four classes of afferent nerve fibers in the dorsal roots, then a histologic examination of the nerve terminations in the skin ought to show each cutaneous nerve fiber to innervate average areas as large as those given above. He attaches a bibliography.

Medical Examiner and Practitioner, New York.

October.

85 Shall We Eliminate Cancer and Consumption from Family History in Our Application Blanks? E. Holovtchiner.
86 A Study on Light. J. Mount Bleyer.
87 Diagnosis and Prognosis of Erysipelas and Erysipeloid Conditions; Their Causes and Treatment. Thomas H. Manley.
88 Suggestions in the Treatment of Diseases of the Respiratory Tract. J. F. T. Jenkins.
89 Health Insurance. J. L. Hatch.

Texas Medical News, Austin.

October.

90 The Value of Modern Aids to Diagnosis of Diseases of the Stomach. J. W. McLaughlin.
91 *Intraspinal Injection of Antitetanic Serum in Tetanus. A. Garwood.
92 Women in Medicine. Harriett Williams.
93 Epidemics. William E. Drisdale.
94 Report of a Case of Malignant Senile Gangrene Cured by Topical Application of Intense Dry Hot Air. E. L. Morse.
95 Treatment of Septicemia by Intense Heat. R. W. Carter.

91. Subarachnoid Injection of Tetanus Antitoxin.—Garwood reports the first case in his practice of recovery from tetanus, and the only case treated by him by this method. Eleven injections of 10 c.c. antitoxin were made in thirteen days, withdrawing a total of 14 ounces of the cerebrospinal fluid in the 11 injections. No improvement was noted until after the third daily intraspinal injection.

American Practitioner and News, Louisville.

September 1.

96 Surgical Aspects of Tuberculosis. A. David Willmoth.
97 Setonage in Empyema. John S. Hoskins.
98 Medical Aspects of Tuberculosis. S. N. Willis.
99 The Roentgen Rays in Tuberculosis. M. F. Coomes.

St. Paul Medical Journal.

November.

100 The Celestial Family of Olympus; Its Physicians and Some of Their Most Notable Lineal Descendants. T. G. Stephens.
101 Raynaud's Disease, with Report of Two Cases. G. A. Newman.
102 Surgery of the Gall Bladder. J. T. Rogers.
103 Colonization of Defectives. A. C. Rogers.
104 Some General Thoughts in Relation to the Practice of Medicine. Emery H. Bayley.

Toledo Medical and Surgical Reporter.

November.

105 Some Facts Concerning Immunity and the Antitoxins. H. E. Smead.
106 Ehrlich's Side-chain Theory of Immunity. A. L. Steinfeld.
107 Rupture of the Uterus. Alfred F. McVety.
108 Potassium as Compared with Sodium and Strontium Salts. Charles Louy.
109 Interstitial Nephritis. Theodore Zbinden.

American Medical Compend, Toledo.

November.

110 Obscure Neuroses and Their Treatment. Brose S. Horne.
111 Treatment of Comedones (Acne Punctata). R. C. Longfellow.
Articles 105, 106, 107 and 109 above also appeared in this journal.

Mississippi Medical Record, Vicksburg.

November.

112 Shock as a Factor in Determining the Time to Operate After Receipt of Injury. F. P. Boatner.
113 A Peculiar Case of Complete Loss of Memory for Twenty Hours. J. A. Tabor.

Journal of the Kansas Medical Society, Topeka.

November.

114 Infectious Diseases and Quarantine. (To be continued.) Arthur W. Clark.
115 The Doctor, the Nurse and the Training School: Their Relations and Interwoven Responsibilities. B. D. Eastman.

Medical Herald, St. Joseph, Mo.

November.

116 Cysts of Ligamentum Latum—Para-oviducts—Mesonephritic. Malformations. Byron Robinson.
117 The Diagnosis of Obscure Bladder Conditions. E. G. Mark.
118 Some Personal Observations on the Treatment of Typhoid Fever. J. D. Brummall.
119 Brief Observations on Some Conditions in Women that Are of Much Concern to the Practitioner. J. Ridgly Simms.

Maryland Medical Journal, Baltimore.

November.

120 *The Dwarf Tapeworm (Hymenolepis nana), a Newly Recognized and Probably Rather Common American Parasite. Ch. Wardell Stiles.

120.—See also ¶1 above.

Journal of Advanced Therapeutics, New York.

November.

121 Some Principles on Which Is Based the Therapeutics of Electricity in Nervous Diseases. A. D. Rockwell.
122 *Address, American Electrotherapeutic Association. Daniel R. Brower.
123 *Radium: with a Preliminary Note on Radium Rays in the Treatment of Cancer. Margaret A. Cleaves.
124 Selective, Harmonic, Electric Vibration: a New Physical Therapeutic Agent. Morris W. Brinkmann.
125 The Roentgen Ray as an Aid in Diagnosis. (Continued.) Herman Grad.

122.—See abstract in THE JOURNAL of October 17, p. 977.

123.—Ibid., p. 978.

Canadian Journal of Medicine and Surgery, Toronto.

November.

126 *Address on Medical Science. Charles S. Sherrington.
127 The Master-word in Medicine. William Osler.
128 The Medical Treatment of Diseases of the Nose and Throat. John Hunter.

126.—This article appeared elsewhere. See THE JOURNAL of November 14, title 107, p. 1233.

St. Louis Courier of Medicine.

October.

129 Cases Illustrating the Course and Treatment of the Fecal Fistulæ which Complicate Appendicitis. Willard Bartlett.
130 Tubal Pregnancy. Report of a Case of Early Rupture. F. G. DeBose.
130½ Malaria. A Review of Some Recent Literature. (Concluded.) John Zahorsky.

Southern Practitioner, Nashville, Tenn.

November.

131 The General Practitioner's Relation to Insanity. A. E. Douglas.

Medical Bulletin, Philadelphia.

November.

132 Ophthalmia Neonatorum. L. Webster Fox.
133 *The Dietetic Treatment of Chronic Nephritis. J. M. Anders.
134 Disorders of Sleep. F. Savary Pearce.
135 A Clinical Study of Organic Iron. John V. Shoemaker.
136 The Treatment of Exophthalmic Goiter. Charles W. McIntire.

133.—This article appeared elsewhere. See THE JOURNAL, November 14, title 1, p. 1227.

Mobile Medical and Surgical Journal.

October.

137 Variola. W. D. Travis.
138 A Weak Solution of Cocain for Local Anesthesia. S. W. Pryor.

Pacific Medical Journal, San Francisco.

October.

139 Post-operative or Incisional Abdominal Hernia. Winslow Anderson.
140 Rodent Ulcer. H. D'Arcy Power.

FOREIGN.

Titles marked with an asterisk (*) are abstracted below. Clinical lectures, single case reports and trials of new drugs and artificial foods are omitted unless of exceptional general interest.

British Medical Journal, London.

October 31.

1 Position of Laryngology and Otology in the Medical Student's Curriculum. Patrick W. Williams.
2 *Discussion on the Operative Treatment of Malignant Diseases of the Larynx. Felix Semon, Themistokles Gluck and others.
3 Two Cases of Epithelioma of the Larynx Remaining Well Two Years After Operation (Thyrotomy). Eugene S. Yonge.
4 *Discussion on the Technic of Operations on the Temporal Bone in Suppurative Middle-ear Disease. P. McBride and others.
5 *On the Local Use of Formalin in the Treatment of Nasal Polypi Before and After Operation on the Same by the Usual Methods. Adolph Bronner.
6 Illustrations of the Effects Produced by the Singing Voice in a Suitable Medium. Arthur G. Haydon.
7 *A Discussion on the Upper Respiratory Tract as a Source of Systemic Infection. F. DeHavilland Hall and others.
8 Difficulties and Insufficiency of the Stenosal Theory of Adenoid Deafness. David McKeown.
9 *The Surgical Treatment of Cancer of the Larynx. E. J. Moure.

2. Malignant Disease of the Larynx.—Semon thinks the intralaryngeal operation does not offer the least guarantee that a due amount of healthy tissue is removed. Thyrotomy is preferable if performed in the early stages of intrinsic malignant disease. It should be thorough and no sentimental considerations must interfere. Experience has shown him that often in cases of extensive disease without removal of the growth and soft parts around it subsequent energetic scraping of the base is sufficient to prevent recurrence. It is only when the cartilage is invaded that its removal is required. As regards total extirpation of the larynx he corrects the impression which has prevailed that he was an opponent of this operation; he advocates it when it is indicated. Subhyoid pharyngotomy is suitable for cases where the disease starts from the epiglottis or from the aryteno-epiglottidean fold. The technic is easy, but there has been a curious fatality in this operation. Palliative tracheotomy ought only to come into question when the disease has started in a locality where nothing short of total extirpation of the larynx could come into play and the patient declines that operation, or when the disease, starting in a better locality for the milder procedures, has not been recognized early enough to allow them to be employed or when serious complications forbid their employment. If it has to be performed it should be done as low down as possible. In conclusion he remarks in regard to the possibility of a reliable diagnosis and points out the difficulties.

Gluck followed Semon in the discussion and described his own methods. For diffuse papilloma, some cases of syphilis and circumscribed cancer of the vocal cords, he would make a low tracheotomy, expose the larynx through a median incision, divide the thyroid cartilage and the crico-thyroid in the median line and retract the halves. Then remove the growth with the scissors, knife, or thermocautery under cocain, putting in plugs of iodoform gauze and suturing to the cartilage. These can be removed in four or six days under anesthesia. If necessary the suspected region is cauterized and the wound stitched up. About the tenth day the sutures are removed and also the tracheal cannula. The third week healing is complete. His results have been excellent with this method. In cancer of the larynx and with tumors of the tongue and pharynx he has escaped the source of danger of inspiration pneumonia by resecting the trachea and stitching the distal cut end of that tube to a buttonhole in the skin, thus preventing the possibilities of foreign bodies reaching the lungs. Gluck also describes his method of hemilaryngectomy and total laryngectomy and extirpation of the larynx or pharynx, or both, reporting cases. His remarks are amply illustrated. His most recent results show a series of 22 complete laryngectomies with 1 death; that in a feeble old man. Of partial extirpations of the larynx and pharynx, generally combined with removal of infected glands, he has a series of 27 cases with only 1 death. In this the carotid had been tied and the death occurred from hemiplegia five days later. His principles are, first save and prolong the life of your patient and do not worry about the postoperative state. Restitution of function will be a secondary care.

4. **Suppurative Middle-Ear Disease.**—McBride's paper is chiefly historical as regards mastoid operation and intracranial suppuration. He reports illustrative cases.

5. **Nasal Polypi.**—Bronner, in case of nasal polypi, removes as much of the growth or diseased mucous membrane as he can with the cold snare and then applies formalin on a probe to the roots. He tries not to cut through the pedunculated polypi, but to pull them out by the roots. In this way he often succeeds in removing the whole, and in many cases part also of the underlying diseased bone. Before using formalin he again applies a powder consisting of equal parts of cocain, eucain and desiccated suprarenal extract to the parts. After a few days a formalin spray of 1 to 500 up to 1 to 100 is ordered to be used three times a day for a week or two and then less frequently. If this is painful he orders a paroleine spray to be used. Formalin is a powerful disinfectant, but also causes contraction and hardening of the diseased tissues. He also uses insufflations of tannoform, aristol and boric acid. As long as there is much discharge an alkaline spray should be used. The middle turbinate is often extensively diseased. He removes the anterior part by the forceps or snare. A careful examination of the nares and the reduction of the swelling by a local application of cocain and desiccated suprarenal extract enable a correct diagnosis to be made. This is his method in all cases of polypi. He is inclined to think that nasal polypus is most often an extension from disease of the accessory sinuses.

7. See abstract in THE JOURNAL of September 12, p. 679.

9. **Cancer of the Larynx.**—In extrinsic cancer with the disease still very limited it may be removed, Moure says, with the snare or cutting forceps under cocain and adrenalin. When it is situated further down, involving the epiglottis, base of the tongue and perhaps even the glosso-epiglottic folds, an external operation is required. For this he prefers transhyoid pharyngotomy, as recommended by Gussenbauer and revived by Vallas. The operation is easy. He opens from just behind the chin, backward to that point of the trachea where the cannula is to be introduced, dividing the tissues layer by layer in the middle line; also the hyoid bone if necessary. By drawing the two halves apart the epiglottis is easily exposed, and it is then drawn forward in the wound and removed. An energetic application of the curette and the thermocautery completes the operation. The two halves of the tongue are then sutured with catgut, the parts of the hyoid bone are held together by stitching the muscles above it and below, and finally, the skin is stitched with horsehair. He thinks it better to leave the tracheotomy tube in for some days, but it is not necessary to feed the patient through a tube. His patients have experienced no trouble in swallowing. The operation is an ideal one, as it gives access for the removal of infected glands, though it will not, of course, prevent recurrence. In intrinsic cancer thyrotomy is beneficial in cases of malignant growth originating in the interior of the larynx and especially of tumors of one or the other of the vocal cords. When one of the ventricular bands is affected and peripheral infiltration exists, or, still more, when the corresponding arytenoid cartilage is fixed, or there are signs of perichondrial disease, this method is unsuitable and should be rejected. He describes his methods at length. When the tumor has extended beyond the limits described, a partial or complete laryngectomy will be required.

The Lancet, London.

October 31.

10 *The Mental Diseases of the Climacteric. George H. Savage.
11 *Carcinoma of the Colon. William J. Walsham.
12 Abstracts of the Harben Lectures. Ferdinand Hueppe.
13 Large Bile Cyst of the Liver; Jaundice Without Cholelithiasis; Incision and Drainage; Recovery. Alban H. C. Doran.
14 The Great Importance from the Point of View of Medical Science of the Proof that Bacteria and Their Allies are Capable of Arising de novo. H. Charlton Bastian.
15 The Treatment of Pulmonary Tuberculosis by High-frequency Currents (Low Potential) and Intralaryngeal Injections of Antiseptics. J. Cunningham Bowie.
16 Some Cases of Dilatation of the Bronchial Tubes After Measles. Theodore Fisher.
17 Four Cases in which a Cystic Ovarian Tumor, which Was Not Malignant, Developed After a Similar Growth of the Ovary on the Same Side Had Been Removed. John D. Malcolm.
18 *An Adjunct to Uterine Irrigation in Puerperal Fever. David Watson.
19 A Case of Cutaneous Neuro-fibromatosis in which Newly Formed Nerve Fibers Were Found in the Tumors. Arthur Whitfield.

10. **Climacteric Insanity.**—The mental disturbances of the climacteric period are largely dependent on the neurotic predisposition, and are more frequent in single women and widows than in married women. The number of women who take to alcohol at this period is remarkable. There is a feeling of languor and inability to do what they want, and the taking of a little "pick me up" develops into a habit. Drug habits also develop about this time. In many cases the natural symptoms develop into delusions, self-consciousness is increased, and there is morbidity with impulsive and passionate acts or even suicide or homicide. A neurotic excitability is often noted and such conditions as kleptomania, hysterical developments, a tendency to lying accusations. Most of the cases are of the depressed type, with ideas of persecution, watching, etc. A late pregnancy occurring about or near the menopause is sometimes the cause of the mental trouble. Next to melancholia, the delusional characteristic is probably the most frequent. Ordinarily, one might say that if a patient did not get well in a year the chances are unfavorable, but with climacteric insanity it is impossible to give a definite prognosis as to recovery or the permanency of the disease. Probably there will be no improvement. If dementia appears it will become more pronounced, but there are occasional cases of remarkable late recoveries from this form of disorder.

11. **Carcinoma of the Colon.**—The points that Walsham emphasizes in this article are that columnar-celled sarcomas are the most benign forms of cancer that exist. At first the growth is localized to the bowel and has not affected the lymphatics, and if taken early enough the patient may be cured or the life prolonged a number of years. He has had cases where there has been no recurrence for about eight years. The symptoms are indefinite abdominal disturbances, uneasiness after eating, flatulency, a history of constipation with eructations, nearly always liquid stools, slowly progressing loss of weight and an almost constant desire to defecate. The rectum should be examined first, and this procedure may reveal the whole trouble. He would go thoroughly into the case, and says one should not assign the trouble to indigestion, but should watch and weigh the patient from week to week. If there is no improvement, examine the rectum and abdomen under an anesthetic, and if there is still no improvement make an exploratory incision, which will do no harm and may do a great deal of good. When an operation is to be performed the best plan is to do it in two stages: (1) Colotomy; (2) resection of the bowel and removal of the growth, uniting the ends of the bowel together with a Murphy button. After good union of the intestine close the colotomy wound and let the bowel resume its function. He advises against taking a wedge-shaped incision out of the mesentery, preferring to go along the edge of the mesentery and not to disturb the nutrient vessels.

18. **Puerperal Fever.**—An adjunct to uterine irrigation is described by Watson. After douching the uterus, express as much of the solution as possible, then inject into the cavity one ounce of glycerin containing 3 per cent. of formalin. This is quite innocuous and non-irritating and, in addition to its powerful antiseptic action, it removes all the water from the uterus. Its use prevents any rise of temperature following the douche which is sometimes observed under ordinary treatment. The whole procedure must be carried out with the strictest antiseptic precautions. Two cases are reported showing the results.

Journal of Tropical Medicine, London.

October 15.

20 *Note on the Use of Kerosene as a Culicide. St. George Gray.
21 *Remarks on the Panama Canal and the Introduction of Yellow Fever Into Asia. St. George Gray.
22 Notes on the Culicidæ of Dehra Dun. F. Wyville Thomson.

23 Syphilitic Gummata Involving Both Knee Joints. William Robertson.

20. **Kerosene as a Culicide.**—Gray finds that kerosene is not an absolutely successful culicide for the adult anopheles. Only a small proportion were killed by it, and it did not prevent them from laying eggs, though it has excellent results in preventing the development of the larvæ. Crude petroleum is more viscid and more likely to be efficient.

21. **Yellow Fever.**—Gray mentions the possibilities of stegomyia developing on steamers and being carried by them. He does not think, however, basing his views on Guiteras' experiments, that yellow fever is transmitted from insects to their offspring.

Indian Medical Gazette, Calcutta.

October.

24 *Perineal Litholapaxy in Children. J. Garvie.
25 The Bhowanipore Food Poisoning. J. Nield Cook.
26 A Note on Some Cases of Poisoning by Scopolia Lurida—Atropaceæ. A. J. Macnab.
27 *A Generally Unknown Source of Enteric Fever. W. Beevor.
28 Adrenalin and Its Uses in General Surgery, Especially Applied to Ophthalmology. Henry Gidney.

24. **Perineal Litholapaxy in Children.**—The indications for litholapaxy in adults and in children are the same, according to Garvie, who recommends the perineal method in young cases in preference to lithotomy. The only direction necessary to give, he says, to those unfamiliar with the operation is to measure the extent of one's incision in the deeper parts with a probe and, having satisfied oneself as to its sufficiency, to remove all instruments and gently insinuate the lithotrite. No force is required. There is no bruising or tearing of the tissues from crushing of the stone. The wound heals in about one week. He would ask the surgeon to use this operation frequently instead of the ordinary litholapaxy.

27. **Enteric Fever.**—Beevor calls attention to the danger of acquiring enteric fever from baths, especially in India. Few people seem to be aware of this possibility. Water may enter the mouth or nose and in this way produce infection. He advises the careful avoidance of any inhalation or swallowing of the water in the bath and careful washing of the teeth and gargling of the throat afterward, using a strong antiseptic tooth powder, and plenty of it. These precautions apply to those who bathe in rivers or streams, especially soldiers in active service.

Bulletin de l'Académie de Médecine, Paris.

29 (LXVII, No. 33.) *Ancestral Dwarf Growth. A. Poncet and R. Leriche.—Nains d' aujourd'hui et nains d' autrefois. Nanisme ancestral. Achondroplasie ethnique.
30 *Sleeping Sickness. R. Blanchard.—Présentation de 3 nègres du Congo, atteints de la maladie du sommeil.

29. **Dwarf Growth To-day and in the Past.**—Poncet presents arguments to prove that the traditions of pygmies in the remote past related to the advance guard of the human race, who were diminutive in stature. Recent discoveries of skeletons of dwarfs in the prehistoric burying places, their numbers during ancient and medieval history and the few specimens known at the present day, all confirm the assumption that they belonged to a special race, numerous in the early days and gradually becoming extinct. Rome had battalions of dwarf gladiators, and as late as the tenth century dwarf races were known to people Switzerland, Alsace, etc. Nuesch and Kollmann maintain that they were the original inhabitants of Europe. Poncet has recently examined two dwarfs, brother and sister, both healthy and intelligent, whose father and grandfather had likewise been dwarfs. Radioscopy shows that the epiphysial cartilage must have become united to the shaft at the normal date, while in ordinary dwarfs this union does not take place and their achondroplasia is pathologic. In the ancestral pygmies the ossification proceeds normally, only the epiphysial cartilage is physiologically and relatively unproductive.

30. **Sleeping Sickness.**—Blanchard exhibited three negroes from the French Congo, and stated that Brumpt who had brought them had observed 38 cases. In 32 of these he had isolated a trypanosoma from the cerebrospinal fluid. He found a fly, the glossina, invariably present where there are cases of sleeping sickness, and thinks that it is probably the obligatory intermediate host. The immunity of certain countries may be due to the absence of this glossina.

Presse Médicale, Paris.

31 (II, No. 83.) *Rôle des leucocytes dans l' assimilation et la répartition des médicaments dans l'organisme. M. Labbé.
32 The Omentum in Infections. L. G. Simon.—Rôle de l'épiploon au cours des infections générales.
33 Walking Apparatus R. Sorel (Havre).—Méthode ambulatoire pour fractures.
34 (No. 84.) *La découverte pré-prostatique du bout postérieur de l' urêtre dans l'urétrotomie externe sans conducteur. E. Forgue (Montpellier).
35 (No. 85.) *Usefulness of a Handle for Bowls, Dishes, Boxes, etc., Used in the Operating Room. F. Jayle.—De l' utilité d' un manche aux cuvettes et aux boîtes de pansements.
36 Report of French Congress of Surgery, Paris, October 19-24.
37 La dichotomie jugée par un chirurgien allemand.

31. **Role of the Leucocytes in Absorption and Distribution of Medicinal Substances.**—Labbé relates experiences which demonstrate that soluble substances are merely absorbed by the protoplasm of the phagocytes and chemical or physiological tests will reveal their presence. Insoluble substances are likewise taken up but undergo a transformation. Arsenic is broken into minute particles, transformed and rendered soluble. Calomel is split into metallic mercury and a bichlorid. This transformation occurs under the influence of the active ferments in the body of the leucocytes, the oxidases. When this transformation is complete the drug requires more complex tests to detect it, and the preliminary destruction of the albuminoid or nucleinic molecule. The research described confirms the superiority of the subcutaneous route over ingestion by the mouth for certain drugs. The insoluble salts become soluble by the mediation of the leucocytes. This occurs slowly and progressively, which explains the tardy and prolonged effects of injection of the insoluble salts. The leucocytes are also attracted to the site of a morbid process and thus carry to it the drug injected, but we must not forget that the drugs themselves have more or less affinity for certain tissues, and display a marked localizing tendency, characteristic for each chemical substance, and which needs further study.

34. **Opening Up Posterior End of Urethra Through Perineum.**—Forgue has performed this operation by the technic described in 3 cases of impermeable fistula of the urethra, going at once to the vesical end of the urethra where it emerges from the beak of the prostate. This technic is advantageous both for impermeable stricture and for traumatic rupture of the urethra. Eight cuts show the various steps of the intervention, which commences like that of a perineal prostatectomy. When the prostate has been located the urethra is incised just below it, and a sound is introduced down to the stricture. The urethra can then be readily incised over this sound and another inserted from the external meatus as far as the stricture. The stricture tissue between the two sounds can then be readily excised.

35. **Handles for Surgical Pans, Etc.**—Jayle thinks that a handle would prevent the practice of putting the thumb on the inside of the edge in handling dishes.

Semaine Médicale, Paris.

38 (XXIII, No. 42.) *La néphrite toxique appendiculaire; albuminurie appendiculaire. Dieulafoy.
39 *Comparative Importance of Heart Disease as Cause of Dismissal from French and German Armies.—Sur l'importance comparée des maladies de coeur comme cause de réforme dans les armées française et allemande.
40 Letter from America. F. Munch.—Sur le climat des Etats-Unis.

38. **Appendicitic Nephritis and Albuminuria.**—Dieulafoy reveals another instance of the insidious treachery of the toxins generated in appendicitis by pointing out their action on the kidneys. The poison injures these organs surreptitiously, without calling attention to its work, and the only external evidence of it is albuminuria. Since he has been studying this phase of appendicitis he has found that every appendicitis of any severity has been accompanied by albuminuria, with or without casts. It appears the second or third day and may be accompanied by a subicteric complexion. The albumin may amount to as much as .25, .5 or 1 gm. or more; in several cases he has witnessed the gradual subsidence of the albuminuria after the appendix has been removed. In these

cases the kidneys have only been lightly touched by the toxins, but in others the lesions are fatally serious. In one case the kidneys, as usual, appeared sound to the eye, but the microscope revealed "nécrose de coagulation" and granular fragmentation of the epithelial protoplasm. This patient had succumbed the fourth day of a toxic appendicitis. In another similar case lesions of necrosis and degeneracy were restricted to the secretory apparatus of the kidney. These and similar cases known to Dieulafoy indicate that death was due to a profound intoxication of the organism rather than to the infection *per se*. The noble elements of the kidney are evidently affected by the cytotoxin generated in appendicitis, and the cells of the liver and stomach are liable to share the same fate. During the fatal cases above mentioned the temperature never rose above 100.4 F., and the pulse did not betray the severity of the intoxication. He thinks that the knowledge of the frequency with which the kidneys are damaged even in the earliest stages of appendicitis will impel the profession to operate early and not wait for the attack to subside. It is very probable that these appendicular toxins generated in acute and chronic appendicitis may be responsible to a certain extent for the development later of chronic nephritis and Bright's disease. Also for pathologic conditions in the liver, especially for cirrhosis of intestinal origin.

39. **Heart Disease Among the Soldiers in France and Germany.**—THE JOURNAL has referred more than once to the concern expressed by the German authorities in regard to the fact that the number of cases of heart disease among the men in the military service has more than doubled during the last twenty years. The proportion has risen from 1.5 to 3.1 per 1,000. In France there has been an increase, but not to the same extent, merely from 1.84 to 2.92 per 1,000. In Germany the number of recruits rejected on account of heart disease has risen from 9.9 per 1,000 in 1894 to 17.4 in 1898. In France these figures for the same years ranged only from 3.97 per 1,000 to 4.07. The editorial we are reviewing suggests as a possible explanation of the condition in Germany that the extensive emigration has drained away the most vigorous young men, and also that the reduction of the period of military service has possibly contributed, as the work of three years is now crowded into two.

Archiv f. Gynäkologie, Berlin.

Last indexed page 1171.

41 (LXX, No. 1.) Instrumental Dilatation. H. v. Bardeleben.—Wesen und Wert der schnellen mechanisch-instrumentellen Muttermundserweiterung in der Geburtshilfe. Unfavorable criticism.
42 *Zur Lehre der Symphysen-Ruptur. F. Kayser.
43 *Zur Frage der hereditären primären Genital-Tuberkulose beim Weibe. S. Gottschalk.
44 Ueber Carcinoma folliculoides ovarii. M. Voight.
45 *Ueber Anatomie und Pathologie der Placenta. Syncytium in dem schwangeren Uterus. Wirkung der Herz- und Nieren-Krankheiten auf die Muskulatur und Plazenta. Atonie des Uterus, Plazenta-Adhärenz, Uterus-Ruptur. P. Kworostansky (Zurich).
46 Fall von chorio-villöser Neubildung (neoformation). M. Zondek.

42. **Rupture of the Symphysis.**—Kayser's patient was a young woman with normal pelvis and living child, extracted with forceps. The diastasis of the ends of the symphysis was 3 cm. at least. He sutured them together with silver wire, suturing the torn ligaments with catgut, draining and immobilization in a plaster cast. The patient recovered without any impairment of her gait or other disturbance. He advocates this procedure in all cases in which the extent of the gap, 2.5 cm. and more, renders the laceration of the ligaments probable. As the symphysis has such remarkable absorbing power, stagnation of even an aseptic secretion is liable to cause fever in these cases.

43. **Hereditary Genital Tuberculosis.**—Gottschalk regards the case he describes as one demonstrating the possibility of hereditary, primary genital tuberculosis. The uterus and adnexa were affected with tuberculosis and were removed by the vagina. The patient was a virgo intacta, with a tuberculous father. No other foci can be clinically detected and the patient has been permanently cured by removal of the diseased organs. Tubercle bacilli were found in the uterus, tubes and ovaries, but to date, three years since, not a trace of tuberculosis elsewhere can be discovered.

45. **Anatomy and Pathology of the Placenta.**—Microscopic study of 22 gravid uteri and of 6 morbid placentæ showed that the placenta has a remarkable capacity for adapting itself to its location and conditions of nutrition, etc. The mode of nidation of the ovum also varies according to the structure of the mucosa. The article is profusely illustrated.

Deutsche Med. Wochenschrift, Berlin and Leipsic.

47 (XXIX, No. 42.) *Die Angina Vincenti. O. Hess (Marburg).
48 2 Fälle von Tetanus acutus. Berlizheimer and J. Meyer (Frankfurt a. M.).
49 *Ueber Influenza, Appendicitis und ihre Beziehung zu einander. Schultes (Jena).
50 *Pharynx-Tuberkulose bei Kindern. P. Schoetz.
51 Ueber unsere bisherigen Paraffin-Erfolge bei Nasendifformitäten und retroauriculären Defekten. R. Sokolowsky (Königsberg).
52 (No. 43.) *Zur combinirten abdominosakralen, -perinealen, bezw. -vaginalen Methode der Exstirpation hochsitzender Mastdarm- und Colon pelvinum- Carcinome. F. Sasse (Paderborn).
53 Der Mechanismus der Darm-Strangulation. Wilms (Leipsic).
54 Ueber Perityphlitis. Schulz (Sonnenburg).
55 *Histology of Pathologic Gastric Mucosa. M. Einhorn (New York).—Ein weiterer Beitrag zur Kenntniss der Histologie der Magenschleimhaut in pathologischen Zustände dieses Organs.
56 Report of Congress of Naturalists and Physicians, Cassel, Sept. 20-26. (Concluded.)
57 Zur Aetiologie des sogen. rheumatischen Tetanus. H. Racine and H. Bruns (Gelsenkirchen).
58 Zur Operation der Cervix-Myome. Gottschalk (Berlin).
59 *Das Wattenlaufen, ein therapeutischer Sport. H. Stelzner.

47. **Vincent's Angina.**—This disorder, which has been recognized since 1893, is described by Hess, who distinguishes two types: 1. The rarer, croupous form with pseudo-membrane without great loss in substance, containing only the fusiform bacillus of Vincent and running a mild course. The membrane soon separates, leaving a very superficial ulcer succeeded by a second, thinner membrane, which after a few days also disappears. There is only a moderate fever for two or three days and slight swelling of the submaxillary glands. In the commoner, ulcerative diphtherial form, there is present, besides the bacillus, the Spirochaetis denticola. Pseudo-membrane forms in from two to four days with moderately deep ulcerations. The exudate is soft, gray, yellowish gray or greenish, and on removal reveals a bleeding ulcer with slight infiltration of the margins and the surrounding mucosa dark red and edematous. This is accompanied by considerable difficulty in swallowing, salivation and bad breath. The other tonsil may also be affected. The temperature goes up to 38 or 39 C. and there is a decided swelling of the neck glands, stiffness of the limbs, loss of appetite and a bad taste in the mouth. The disturbance in the general condition is usually only moderate, but may be severe. From the eighth to the tenth day the membrane separates, the ulcer heals up and very quick improvement occurs. Some cases of longer duration have been reported, from one to two months, and some defect may be left; in one case loss of the uvula has been recorded. The bacillus fusiformis differs from that of diphtheria in its length (6 to 12 microns), and in its form. It is thin and pointed at the ends and swollen in the middle, and lies scattered around like a diplobacillus, in radiating bundles, or the bacilli form acute angles. Its involution form shows vacuoles and other degenerative phenomena, and it forms no spores. It is readily stained with fuchsin and methylene blue and is markedly motile with long thin flagellæ, which appear at the ends and on both sides. The motility ceases in twenty minutes (Graupner). The bacilli are most numerous in the first days of the disease, and later, especially in the second form, other bacteria appear also. Pure cultures have never been obtained, the bacilli always occur with other bacteria. Spirillæ are present only in the second type of the disease. They are thin and long, twice as long as the bacillus, stain less readily and are not decolorized by the Gram stain; are very motile and likewise not cultivatable. They are found more abundantly on the surface than in the depths of the membrane. Inoculation experiments with the membrane or mucous membranes of sound animals have been generally without results, and the bacilli could be grown only in weak and tuberculous animals,

producing ulceration. Both microbes are saprophytes in the oral cavity and digestive tract. The spirillæ are never pathogenic except in combination with the fusiform bacillus. Seitz found the latter present in 110 out of 202 different disorders. The diagnosis of the condition is made positive by the presence of these forms and the non-presence of the true diphtheria bacillus, the exclusion of syphilis and the finding of staphylococci and streptococci only in the upper layer of the membrane. The therapeutics consists of gargles with chlorate of potash, etc., penciling with Lugol's solution, iodovasogen 5 per cent., silver nitrate, Peru balsam or methylene blue.

49. **Influenza and Appendicitis.**—Schultes has recognized 5 cases of appendicitis occurring in the course of influenza and attributable to influenzal infection which he reports. He reviews the literature of the subject to some extent.

50. **Tuberculosis of the Pharynx in Children.**—The rarity of this condition in children is first noticed by Schoetz, who reports 2 cases and notices those reported by Siegert, Catti and Comba. Altogether there have been reported 19 cases, a very small number considering the frequency of the condition in adults. He thinks it probable that in some instances it has been overlooked from its resemblance to diphtheria, which was diagnosed in one of his cases. The course is always fatal.

52. **Combined Method of Extirpating High Carcinoma in Rectum, Etc.**—In 4 cases Sasse has removed a carcinoma involving the higher portion of the rectum or colon. His first patient was a man of 45, and it is the first operation on record in which part of the rectum and small intestine were successfully removed in this way from a male subject. The other operations were on two elderly women and one man—the latter succumbing in a few days to peritonitis from an unsuspected hernia. The others are all in good health. Sasse commences the extirpation of the neoplasm by way of the perineum, sacrum or vagina, terminating it by a laparotomy, or vice versa, or returning from the second route to the first. He prefers the abdomino-sacral route for carcinoma reaching down to the floor of the Douglas or lower, with probable involvement of the lateral lymphatics. The statistics of this combined method show 20 recoveries in 35 operations, the mortality being 43 per cent., but by sex, the statistics show 93.3 per cent. recoveries in 13 women and 43 per cent. in 14 men. He describes his own material in detail. In the case first mentioned he commenced by resecting the sacrum, but found a loop of small intestine adherent with a communication into the rectum. He then tamponed this wound, raised the pelvis and proceeded to a median laparotomy. The loop of small intestine was resected and reunited with a Murphy button, and as much as possible of the mesocolon and pararectal connective tissue was dissected out and pushed out through the sacral opening. The peritoneum had been incised and turned back on each side of the field, and it was now sutured with catgut to leave no secreting surfaces in the abdominal cavity. The mesentery of the flexure was then mobilized and the small pelvis packed with a long strip of iodoform gauze, the end protruding from the sacral incision. The abdominal incision was then closed and the tumor then ablated *en masse*. The mucosa of the portion of the rectum left was removed at the same time and the upper stump drawn through it and sutured to the external anus. The temperature reached 38 C. only once. The intestine became gangrenous for 8 to 10 cm., resulting in the formation of a sacral anus, which healed in less than nine weeks. The patient was a farmer of 45, and he is in good health almost three years since, has gained in weight and has been a father. The first symptoms of the rectal cancer were noted two years before the operation.

55. **Histology of Gastric Mucosa.**—Einhorn gives in 15 cuts the microscopic aspect of sections of the stomach mucosa as selected from 34 cases of various stomach affections. He is convinced that the disorders in the secretory function are not due to primary alterations in the stomach mucosa, but that they entail the latter in time if long continued. He has been able in a few cases to diagnose cancer from a scrap of the mucosa, showing a direct proliferation of the cells of the epithelium into the gland substance. In regard to treatment of deranged secretory function, he thinks that the main stress should be laid on improvement of the general condition.

59. **Wattenlaufen—A New Therapeutic Sport.**—During the last few years a seacoast resort in northwest Germany has inaugurated a sport which is commended by Stelzner for its therapeutic value. With legs bare to the knee the people, young and old, men and women, flock to the shore as the tide goes out and promenade on the wet sand left bare by the receding tide. Many elderly persons come to this resort from a distance to take advantage of this sport as a therapeutic measure, saying that it ensures them a healthy winter. It is not practiced as a fad, but in all seriousness, and the return of the tide prevents excess. Stelzner reviews the indications and contraindications for this beach strolling, and states that its best effects are obtained in nervous affections, insomnia, etc., far surpassing those resulting from sea bathing.

Mitteilungen aus den Grenzgebieten, Jena.

Last indexed page 815.

60 (XII, No. 1.) *Present Status of Surgery of Pancreas, with Especial Regard to Injuries and Inflammations of the Organ. J. v. Mikulicz (Breslau).—Ueber den heutigen Stand der Chirurgie des Pankreas mit bes. Rücksicht auf die Verletzungen und Entzündungen des Organes.

61 *Hypersecretion of Gastric Juice. H. Strauss (Berlin).—Klinische Studien über den Magensaftfluss.

62 *Ruptures of Gastrointestinal Tract. Sauerbruch (Berlin).—Die Pathogenese der subkutanen Rupturen des Magendarmtraktus.

63 *Tumors of Spinal Membrane. F. Schultz (Bonn).—Zur Diagnostik und operative Behandlung der Rückenmarkshautgeschwülste.

60. **Surgery of Pancreas.**—Mikulicz refers appreciatively to the recent work on this subject by Mayo Robson and Moynihan which has appeared since he delivered this address at Washington last May. (See page 1524 of last volume.) He advocates laparotomy when symptoms point to injury of the pancreas, although none of them is pathognomonic. After arresting the hemorrhage and rinsing out the peritoneal cavity with a 9 per cent. saline solution, he always applies tampon drainage even if he has been able to suture the wound in the pancreas. In acute pancreatitis he operates at once in order to put an end to the dangerous toxic-septic condition and prevent necrotic degeneration of the tissue of the gland from the abnormal pancreatic ferment. It is difficult to distinguish between acute pancreatitis and the so-called pancreas apoplexy, and chronic pancreatitis may simulate carcinoma of the organ. Chronic pancreatitis is induced by gallstones more frequently than by true pancreas stones. He has collected 75 cases of acute pancreatitis treated by surgical intervention. In 37 the pancreas itself was operated on, and 25 were cured. In 41 the pancreas was not operated on and only 4 of the patients recovered. He has operated on the pancreas thirty-one times. In 10 cases on account of cyst, including 2 ablations of the organ and 8 in which it was merely incised and drained. All the patients recovered. In 16 cases the intervention was for malignant tumors. He reviews his experiences in detail.

61. **Hypersecretion of Gastric Juice.**—Strauss describes the clinical picture of this condition, free from complications, as the finding of more than 30 c.c. of true gastric secretion in the empty stomach without sprouting sarcinæ and molds, and negative results to the fermentation and currant tests, indicating the lack of pronounced derangement of the motor function. From 10 to 20 c.c. indicates some abnormal condition; 20 to 30 is pathologic. The smallest amount he found in any case with clinical manifestations was 40 c.c. The acute and intermittent cases are generally of nervous origin, occurring in the course of tabes or severe functional neuroses, but sometimes they are due to some local condition of irritation, possibly from stenosis. The chronic form of gastrosuccorrhea may likewise be regarded as the result of some local irritation of the secreting apparatus of the stomach. This condition of irritation may be of intragastric origin, possibly from some motor disturbance, but usually outlasting the latter. Sometimes it is the result of gastric ulcer, which in turn is unfavorably influenced by the hypersecretion. In other cases the source of the irritation may lie outside the

stomach, and be neurogenic or hematogenic. He advocates in treatment systematic evacuation of the stomach content with the stomach tube. In case of motor derangement he supplements this by lavage, raising the pelvis. An albumin and fat diet is kept up for several weeks—butter and oils, with small, frequent meals, rectal feeding and, if necessary, a course of treatment as for gastric ulcer. For medication he prefers alkalies, with silver nitrate if needed, bismuth and atropin if there are paroxysms. Gastroenterostomy is the last resort. He concludes his article with a study of the metabolism in cases of hypersecretion.

62. **Subcutaneous Ruptures of Gastrointestinal Tract.**—Sauerbruch has made an exhaustive study of the conditions that produce contusions, rupture and laceration of the stomach and intestines. Contusions of the intestine may not be perceptible from the aspect of the viscus alone. They are liable to be induced by contusion of the spine or pelvis, the intestine almost empty and the force applied to a circumscribed region. A predisposition to rupture is afforded when the intestines are full or the loop of intestine closed at both ends with contusion of the abdomen affecting the distended loop. Laceration from traction is liable when the force is applied obliquely from below upward at an angle to the spine. Also when the contusion or traction affects an intestinal loop immovably fastened by physiologic or morbid conditions. These three types of injury may be associated. Further predisposition is afforded by reflex rigidity of the abdominal wall, muscular tonus, the condition of the peritoneum, shape of the pelvis and condition of the abdominal organs at the time, as in pregnancy, affections of the intestinal walls, etc.

63. **Tumors of Spinal Membrane.**—Schultze diagnoses a tumor in the spinal membrane in cases presenting a permanent and gradually progressing motor and sensory paralysis, its limits above always persisting at or near the same point, even in the absence of pain of any kind. These symptoms differentiate a tumor of the spine outside of the spinal cord after exclusion of syphilis, myelitis and vertebral affections. It may be difficult to differentiate the condition from multiple sclerosis, which may develop with the clinical picture of a transverse myelitis, and also from chronic pachymeningitis and leptomeningitis, intramedullary tumor and vertebral caries. In locating the tumor it is important to note besides the pain on pressure, the zones of exaggerated or deficient sensation and symptoms of motor derangement. The reflexes, pains and paresthesia at remote points are less important for the differentiation. He reports 10 cases, in 9 of which his diagnosis of an extramedullary tumor was confirmed by the operation or necropsy. Three of the patients were permanently cured by surgical intervention and one permanently improved, while 3 died soon afterward. A tumor of this kind is usually a fibroma or fibrosarcoma when it develops slowly and symptoms are observed for years. There was no evidence of trauma in the etiology in his cases.

Münchener Med. Wochenschrift, Munich.

64 (L, No. 42.) *Mirror Register of Pulse. O. Frank (Munich).—Die Registrierung des Pulses durch einen Spiegel-Sphygmographen.
65 Smallpox in Strassburg. J. Baer.—Die Pockenerkrankungen in Strassburg i. E. im Sommer 1903.
66 Relations Between Blood Serum and Body Cells. K. Landsteiner.—Ueber Beziehungen zwischen dem Blutserum und den Körperzellen.
67 *Axial Torsion of Large Intestine During Childbirth. F. Fromme.—Ueber Achsendrehung des Dickarms unter der Geburt.
68 Aspirin in der augenärztlichen Praxis (in ophthalmology). O. Neustätter.
69 By-Effects of Aspirin. Winckelmann.—Aspirin-Nebenwirkung.
70 *Mixed Narcosis with Laughing Gas. Krönig (Jena).—Ueber Lachgasmischnarkosen.
71 *New Form of Splint. O. Vulpius.—Die Heidelberger Verbandschiene, eine neue Schienenvorrichtung.
72 Modified Burette as Tube for Centrifugalizing. C. Klieneberger.—Eine modifizierte Bürette als Zentrifugenröhrchen.
73 *Improved Electric Light for Examining. V. Pick.—Eine einfache Vorrichtung zur Verbesserung der elektrischen Untersuchungslampe.
74 The Lighting of Schools, etc. Report of Committee.—Die Beleuchtungsanlagen in den Erziehungs und Unterrichtsanstalten.

64. **Mirror Sphygmograph.**—Frank thinks that the weight of the parts of the sphygmographs in use prevents accurate measurement of the actual pulse wave. To obviate this inconvenience he has devised an apparatus in which the movements of the lever applied to the artery are reflected on a mirror constantly turning on its axis. Light is focused on the mirror in such a way that it follows the movements of the sphygmograph lever, and these variations are mirrored on a sheet of sensitized kodak film, likewise revolving on a roller with the same velocity as the mirror. In this way the pulse curve is recorded without interference from the weight of the parts of the registering apparatus. He uses a Nernst incandescent lamp for the source of the light, focused by a lens. The entire apparatus is small and simple and does not require particular skill on the part of the user.

67. **Axial Torsion of Large Intestine During Childbirth.**—Fromme has observed a case of this kind and has found 2 others in the literature, all befalling healthy young women at the onset of parturition. Each case terminated fatally. None was diagnosed correctly.

70. **Laughing-Gas Mixed Narcosis.**—Krönig gives cuts of an apparatus he has devised for this method of narcosis. It is a combination of Bennet's inhaler with the Braun apparatus. He has used it in 500 narcoses and proclaims that it is entirely free from the inconveniences of the initial stages of the usual chloroform and ether narcosis. He applies the mask with only air passing through it, and this tranquilizes the patient. He then turns on the odorless, compressed laughing-gas and in 40 to 60 seconds the patient is unconscious; ether can be substituted for the gas without his knowledge, and the narcosis proceeds smoothly.

71. **Vulpius' New Splints.**—The splints are made of aluminum and consist of a row of cross strips, each provided with a ring on the outside through which a rod of aluminum is slipped to hold them all firm. He gives illustrations of the mode of application and extols their superiority over other splints.

73. **Improved Electric Lamp for Examinations.**—Pick coats the bulb of an ordinary 16 candle-power incandescent lamp with a layer of gypsum, leaving only a small space free on one side. This concentrates the light at one point and leaves the rest of the room dark. He states that it is surprising how powerful a ray can be thus produced from an ordinary incandescent bulb.

Therapeutische Monatshefte, Berlin.

Last indexed page 1173.

75 (XVI, No. 7.) "Successes" of Diphtheria Serum Treatment. Kassowitz.—Die Erfolge des Diph. heilserums.
76 Discussion of Diuretic Action of Boric Acid. O. Liebreich.—Ueber die diuretische Wirkung der Borsäure.
77 *Odda in Infant Feeding. E. Müller.—Zur Ernährung von Kindern mit Odda.
78 *Zur Behandlung der puerperalen Septico-Pyemie, mit intravenösen Collargol-Injektionen. Rosenstein.
79 So-Called Iodin Baths. Pelizaeus.—Ueber die sogen Iodbader.
80 Modified Adenotome. L. Katz.—Ein modifiziertes Ringmesser (knieförmiges Adenotom) nit einigen Bemerkungen.
81 *Protargol-Gelatine in Gonorrhea. P. Scharff.—Ueber die Urosanolbehandlung in der Gonorrhoe.
82 Present Status of Treatment of Whooping Cough. M. Schreiner.—Ueber den heutigen Stand, etc., und über neuere Erfahrungen mit Oxykampfer und Citrophen. (Concluded.) See also No. 8.
83 Clinical Thermometer that Can Be Boiled. E. Kantrowicz (Berlin).

77. **Odda in Infant Feeding.**—This artificial baby food differs from others in that it contains in large proportion the yolks of hen's eggs. Müller has found it specially useful added to the milk after the seventh month.

78. **Collargol in Pyemia.**—Rosenstein's experience has been favorable in his cases of puerperal septicemia treated with intravenous injections of collargol. He uses for the purpose a syringe of his own devising, which he describes and illustrates. When suppuration has already occurred, then all silver salts are ineffectual. He thinks the dosage of collargol, etc., is still in the experimental stage and that still larger amounts might possibly be injected with impunity.

81. **Protargol Gelatin in Gonorrhea.**—Scharff has treated 30 cases of gonorrhea with urosanol and found it very satisfactory, but warns that it should not be used for more than three weeks at a time.

Wiener klinische Wochenschrift, Vienna.

Last indexed page 1121.

84 (XVI, No. 39.) *Ein System der Lymphomatosen. W. Türk.
85 Fall von Anemia splenica mit Uebergang in Lymphozyten-Leukämie. S. M. Zypkin.
86 Zur Symptomatologie der Pellagra. L. Stefanowicz.
87 (No. 40.) Mode of Action and Origin of Active Substances in Sera. Max Gruber.—Wirkungsweise und Ursprung der aktiven Stoffe in den präventiven und antitoxischen Seris.
88 *Suture of the Septum in Prolapse Operations. R. Gersuny.—Die Septumnaht bei Prolapsoperationen.
89 Zur operativen Behandlung des Klumpfusses und des Plattfusses. F. v. Friedländer.
90 *Urotropin als Prophylacticum gegen Scharlach-Nephritis. J. Widowitz.
91 (No. 41.) *Ueber den Circulus vitiosus nach Gastroenterostomie. O. Föderl.
92 *Zur Chirurgie des kallosen penetrierenden Ulcus ventriculi. H. Lorenz.
93 *Zur Skopolamin-Morphin-Narkose. M. Stolz (Graz).

84. **Classification of Lymphomatoses.**—Türk groups cases of lymphomatosis as the chronic benign, the acute and the chronic malignant. The first two groups are subdivided into the alymphemic, the sublymphemic and the lymphemic, the latter being chronic or acute lymphoid leukemia, both of benign character. The sublymphemic chronic benign is Pinkus' pseudolymphemia, and all forms of the partially aggressive, acute cases of lymphomatosis come under the heading of chloroma. The chronic malignant is lymphosarcomatosis, either local or generalized. All these types may appear independently and transitional forms may be observed, especially between the sublymphemic and lymphemic types. He describes a number of unpublished cases to illustrate the bases for this classification. He shows that chloroma is an acute lymphomatosis with a green coloring of the lymphoid proliferations and a special predilection in the skeleton for the periosteum and marrow in its localizations. The green coloring is an unessential symptom, not creating any essential difference between this form of the affection and other acute lymphomatoses of the same nature. Its predilection for the periosteum, dura and serosæ justifies the assumption of partial aggressiveness, and this is sustained by the findings in the spleen, glands and marrow which present regularly the anatomic characteristics of acute leukemia. That is to say, the points where the conditions are unfavorable for the washing away of the cells exhibit evidences of injury. When the lymphatic system is abnormally functioning or enlarging or the lymph cells are being produced in abnormal abundance—if the lymph cells are not swept away they pile up and cause the formation of a tumor. This is liable to become aggressive at any moment, and especially at those points where the local anatomic conditions are such as to interfere with the washing away of the cells. As these anatomic conditions differ at various points, the subject may exhibit simultaneously benign tumor formation at one place and partially aggressive at another, without justifying the assumption that two different processes are involved. Benign lymphomatosis is also liable to become transformed into a localized lymphosarcoma at any time. This is particularly likely to happen in the aleukemic forms, anything causing even a slight, local or transient increase of the slow, gradual proliferation may impart the impulse to local aggressive growth. In conclusion he notes that the more acute the course of the lymphomatosis the more pronounced the abnormal character of the cells. It is possible that the leucoblastic myeloid tissue may suffer likewise from such acute hyperplastic affections, with production of similarly abnormal cells, ending finally in cells which no longer differ essentially from those observed in acute lymphomatosis. There are probably borderland affections of these great systems, the intermediate rôle being the acute hyperplasia of both systems. It is possible that many puzzling cases may prove to be a myeloid counterpart to the acute lymphomatoses.

88. **Suture of the Septum in Prolapse Operations.**—This article was contributed to the Chrobak *Festschrift*, 1903, and is accompanied by ten cuts showing the various steps of the technic, the aim sought and the conditions realized. Gersuny believes that prolapse after childbirth is due more to the injury to the pelvic cellular tissue than to the stretching of the vagina, etc. He remedies the conditions in vaginal cystocele by restoring and strengthening the vesico-vaginal and the recto-vaginal septa. He detaches the anterior wall of the vagina from the cystocele throughout its entire extent. The wall of the bladder is then pushed inward and the size of the organ thus reduced, and this reduction assured by two sutures. This reduces or closes the gap in the septum, and by reuniting the anterior vaginal-wall flaps the suture of the septum is re-enforced. The proctocele is then treated in the same manner—a superficial circular suture is run around the prolapsed portion and after reduction the thread is drawn up and tied. The perineum is then restored with buried sutures, but the suture of the septa is the main feature of the intervention.

90. **Urotropin as Prophylactic Against Scarlet-Fever Nephritis.**—Widowitz has never had a case of nephritis among his 102 scarlet fever patients since he introduced the plan of preventive administration of urotropin. He gives from .05 gm. to .5 gm. of urotropin three times a day, according to age, during the first three days of the disease, and again at the beginning of the third week, for another three days.

91. **Circulus Vitiosus After Gastroenterostomy.**—Föderl reviews his experience as assistant at Gussenbauer's clinic, 1895-1902, during which time 62 gastroenterostomies were performed. A certain number presented symptoms of the circulus vitiosus, and Föderl is inclined to attribute this to the too acute angle formed by the anastomosed loop. As it bends in a sharp angle the lower wall projects into the lumen in a sharp fold, acting like a valve at times, closing the lumen of one or the other arm of the loop. He shows that this can be prevented by shortening the mesentery of the anastomosed loop. When three radial stitches have been taken in the mesentery just below the point of the anastomosis, and tied, this takes a tuck in the mesentery and the loop is unable to stretch up into a sharp point, but must retain its broad curve.

92. **Treatment of Gastric Ulcer.**—Lorenz relates two cases of the so-called callous penetrating gastric ulcer which required an operation. The patients were women of 52 and 57, and the tumors tore in each case as a drain tube was being introduced. This variety of ulcer does not have as good prognosis as others, but both these patients rapidly recovered. Lorenz thinks that there may possibly be some connection between this unexpectedly favorable result and the tearing of the ulcer tissue during the intervention. It may have mobilized the tissues and thus have created better conditions for healing in place of the rigid ulcer growth.

93. **Scopolamin-Morphin Narcosis.**—Stolz was obliged to complete the narcosis with inhalation of an anesthetic in 309 out of 465 patients anesthetized by the scopolamin-morphin method. Three of the patients died in consequence of the injections, one exhibited profound and 9 slight asphyxia, while heart weakness was frequently observed.

Zeitschrift f. klinische Medizin, Berlin.

Last indexed page 1173.

94 (L, Nos. 3-4.) *Nitrogenous Substances in Pathologic Urine. R. von Jaksch (Prague).—Weitere Mittellungen über die Verteilung der stickstoffhaltigen Substanzen im Harne des kranken Menschen.
95 Increased Heat Production as a Cause of Fever. W. Hale White.—Vermehrte Wärmebildung als eine Ursache des Fiebers.
96 *Tendon Reflexes in Nephritis. A. Lion (von Leube's clinic, Würzburg).—Das Verhalten der Sehnenreflexe bei Nierenentzündung.
97 Why Are Scientific Deductions in the Domain of the Healing Art So Difficult, etc. O. Rosenbach.—Warum sind wissenschaftliche Schlussfolgerungen auf dem Gebiete der Heilkunde so schwierig, und in welchem Umfang können wesentliche Fehlerquellen durch die betriebstechnische (energetische) Betrachtungsweise vermindert oder beseitigt werden? (Concluded.)
98 Ueber muskuläre Rückenversteifung (Rigiditas dorsalis myopathica, Senator) mit bes. Berücksichtigung des traumatischen Ursprungs. E. Barg (Senator's clinic, Berlin).
99 *Blood Pressure and Physical Exercise. Karrenstein.—Blutdruck und Körperarbeit.
100 *Influence of Nutritive Enemata on Peristalsis and Secretion in Gastrointestinal Canal. O. Loewe (von Leube's clinic, Würzburg).—Ueber den Einfluss von Nährklystieren auf die Peristaltik und Sekretion im Magendarmkanal.

94. **Nitrogenous Substances in Pathologic Urine.**—The extensive researches here described may be epitomized in the statement that in diabetes, typhoid fever, liver affections and certain cases of exophthalmic goiter, there is a very slight in-

crease in the amido-acid nitrogen. Also that 1.5 to 3 per cent. of the total nitrogen in the urine consists of amido-acid nitrogen, and that this percentage may be increased by the diet. Von Jaksch announces further that 95.85 to 98.36 per cent. of the nitrogen in the urine in morbid conditions, not precipitated by phospho-tungstic acid, consists of urea. On the other hand, 5.16 to 8.51 per cent. of the nitrogenous compounds precipitated by this agent consists of purin bodies and ammonia. He found that 83.83 to 91.07 per cent. of the total nitrogen in the urine is in the form of urea, while 1.52 to 3.61 per cent. is in the form of amido-acid nitrogen. Multiplying the total nitrogen by the proportion of nitrogenous substances precipitated by phospho-tungstic acid in urine free from albumin, gives the percentage of urea sufficiently accurately enough for clinical purposes.

96. **Behavior of Tendon Reflexes in Kidney Disease.**—Lion found that the knee-jerk was about normal in afebrile cases of nephritis, but that it became exaggerated as the affection grew more serious, especially with threatening uremia. In contracted kidney with good diuresis it was normal. In only 5 out of 262 cases were the reflexes diminished. The exaggeration in severe nephritis may be regarded as a sign of retention of substances which normally enter into the formation of urine. As the symptoms become attenuated with recovery or transition into the chronic form the reflexes have a tendency to return to normal.

99. **Blood Pressure and Physical Exercise.**—Karrenstein refers to a vasodilating reflex the reduction of the blood pressure noted after long-continued physical exercise.

100. **Nutritive Enemata in Regard to Peristalsis.**—Loewe examined the exposed stomach and intestines of cats, after injection of a nutritive enema to the ileocecal valve. He found that the addition of opium rendered the absorption of the fluid possible without any motor stimulation of the stomach or small intestine. The large intestine always showed signs of peristalsis, although very slight, and it was noted also in the small intestine when the opium had been omitted. He concludes that nutritive enemata may be used with impunity in case of affections of the stomach and upper intestine, and (with opium) of the middle intestine, but they are contraindicated in case of perityphlitis and typhoid fever, especially during the period when the scabs are being thrown off. He found droplets of oil from the enema in the entire intestinal canal and even in the stomach in 2 cases.

Brazil Medico, Rio de Janeiro.

Last indexed page 1174.

101 (XVII, No. 26.) Modified Phimosis Forceps. A. B. Benjamin.—Pinça de phimosis modificada.
102 (No. 28.) A febre amarella e a cellula hyalina. J. B. de Lacerda.
103 (No. 29.) Blood-sucking Insects in Southern Brazil. A. Lutz.—Nota preliminar sobre os insectos sugadores de sangue observados nos Estados de S. Paulo e Rio de Janeiro.
104 *Brazilian Method of Treating Aneurisms of Aorta. A. de Freitas.—Methodo brazileiro ou voltaisaçao cutanea positiva no tratamento dos aneurismas da aorta.
104½ (No. 31.) Serumtherapia da peste.—Valor curativo do serum antipestoso de Butantan. V. Godinho.
105 *Report of Committee on Transmission of Yellow Fever by Clothing.—Febre amarella.
106 (No. 32.) Sobre alguns signaes cardiacos ainda nao descriptos na febre amarella. A. Austregesilo.
107 (No. 34.) Estudo de algumas formas clinicas do paludismo. E. Meirelles. (Concluded.)
108 (No. 35.) Conclusion of Report of Fifth Brazilian Medical Congress. (Commenced in No. 25.)

104. **Electric Treatment of Aneurisms.**—De Freitas calls this method of positive cutaneous galvanism "the Brazilian method," and claims that it deserves the preference over all others, as it aids Nature, and is the easiest for the patient. He exhibited a patient at the local medical society whose aneurism of the ascending aorta had been reduced from 42 cm. in circumference to 37, with the complete cessation of all the annoying symptoms and final reduction of the aneurism by 5 cm. in all its diameters. In one patient, after potassium iodid had been used for two years without relief, the electric treatment proved rapidly successful in arresting the pains and distress. Another patient had been treated for five years in vain with other measures, and received the same benefit as the first from the electricity. His record includes 5 others all materially improved. As many as 50 sittings were needed in some cases to produce the desired result.

105. **Non-Transmission of Yellow Fever by Clothing.**—The committee appointed by the Brazilian authorities report an interesting series of experiments. Nine persons went to the isolation hospital and slept on bedding and wore garments from yellow fever patients. In the room occupied by some of the subjects three bottles were opened—one containing urine from a yellow fever patient, another black vomit, and a third some yellow fever feces. The garments and bedding were also shaken in the room. The tests were continued from February 18 to May, and none of the subjects nor the members of the committee have shown the slightest symptoms of illness to date.

Books Received.

Acknowledgment of all books received will be made in this column, and this will be deemed by us a full equivalent to those sending them. A selection from these volumes will be made for review, as dictated by their merits, or in the interests of our readers.

CLINICAL PATHOLOGY OF THE BLOOD. A Treatise on the General Principles and Applications of Hematology. By James Ewing, M.D., Professor of Pathology, Cornell University Medical College. New York. Second edition, revised and enlarged. Price, $3.50 net. Cloth. Pp. 492, with 43 engravings and 18 full-page colored plates. Philadelphia and New York: Lea Brothers & Co.

THE TREATMENT OF CERTAIN MALIGNANT GROWTHS BY EXCISION OF EXTERNAL CAROTIDS. By Robert H. M. Dawbarn, M.D., Professor of Surgery and Surgical Anatomy in the New York Polyclinic Medical School and Hospital. (The Samuel D. Gross Prize Essay.) Pp. xiii-192. Cloth. Price, $2.00 net. Philadelphia: F. A. Davis Company.

THE NATURE OF MAN. Studies in Optimistic Philosophy. By Elie Metchnikoff, Professor at the Pasteur Institute. The English Translation. Edited by P. Chalmers Mitchell, M.A., D.Sc., Oxon., Secretary of the Zoological Society of London. Cloth. Pp. 309. Price, $2.00 net. New York and London: G. P. Putnam's Sons. 1903.

A TEXT-BOOK OF PRACTICAL GYNECOLOGY, for Practitioners and Students. By D. Tod Gilliam, M.D., Professor of Gynecology in Starling Medical College, Columbus, Ohio. Cloth. Price, $4.00 net. Illustrated with 350 engravings, a colored frontispiece and 11 full-page half-tone plates. Philadelphia: F. A. Davis Company.

DISEASES OF WOMEN. By Alfred Lewis Galabin, M.A., M.D., F.R.C.P., Late Fellow of Trinity College, Cambridge. Sixth Edition. Much Enlarged. With 284 Illustrations. Cloth. Pp. 695. Price, $5.00 net. Philadelphia: P. Blakiston's Son & Co. 1903.

STATIC ELECTRICITY, X-RAY AND ELECTRO-VIBRATION. Their Therapeutic Application. By Franklin B. Gottschalk, M.D., Professor of Diseases of Children, Jenner Medical College. Cloth. Pp. 176. Price, $2.00. Chicago: T. Eisele.

TREASURY DEPARTMENT. Spotted Fever (Tick Fever) of the Rocky Mountains. A New Disease. By John F. Anderson. Paper. Pp. 50. Washington: Government Printing Office. 1903.

New Patents.

Patents of interest to physicians, October 20 and 27.

741996. Vaporizer. Godfrey Beaumont, Dallas, Texas.
741886. Vaccine tube. Walter H. Chandler, Toronto, Canada.
741929. Hernial truss. Wm. S. Rice, Adams, N. Y.
742081. Strabismus goggle. John E. Stierle, Marshfield, Wis.
741849. Artificial leg. Charles E. Stone, Port Townsend, Wash.
741989. Closure of vessels for sterilized substances. Jochum K. Van der Heide, Amsterdam, Netherlands.
741742. Sterilizing apparatus. George Van Eyck, Oeflingen, Germany.
742377. Tablet-feeding machine. John W. and A. M. Ayers, New York, N. Y.
742560. Sterilizer. Robert P. Barnstead, Ashmont, Mass.
742287. Massage instrument. Louis Casper, Chicago.
742608. Truss. Royal Doane, Elmira, N. Y.
742634 and 742635. Medicament injector. Thomas E. Hall, Chicago.
742434. Syringe, Engelbert Hriss, Frankfort-on-the-Main, Germany.
742329. Sight-testing apparatus. George Johnston, Detroit.
742790. Stethoscope. Wm. Jones, Denver.
742341. Ozonator. Joseph Miller and F. M. Ashley, New York.
742244. Machine for producing hot-air currents and liquid spray. James C. Sherburne, Des Moines, Iowa.
742814. Surgical appliance. Albert V. Todd, Denver.
742762. Hypodermic syringe. Ralph Walsh, Washington, D. C.
742534. Massaging implement. Julius B. Wantz, Chicago.

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